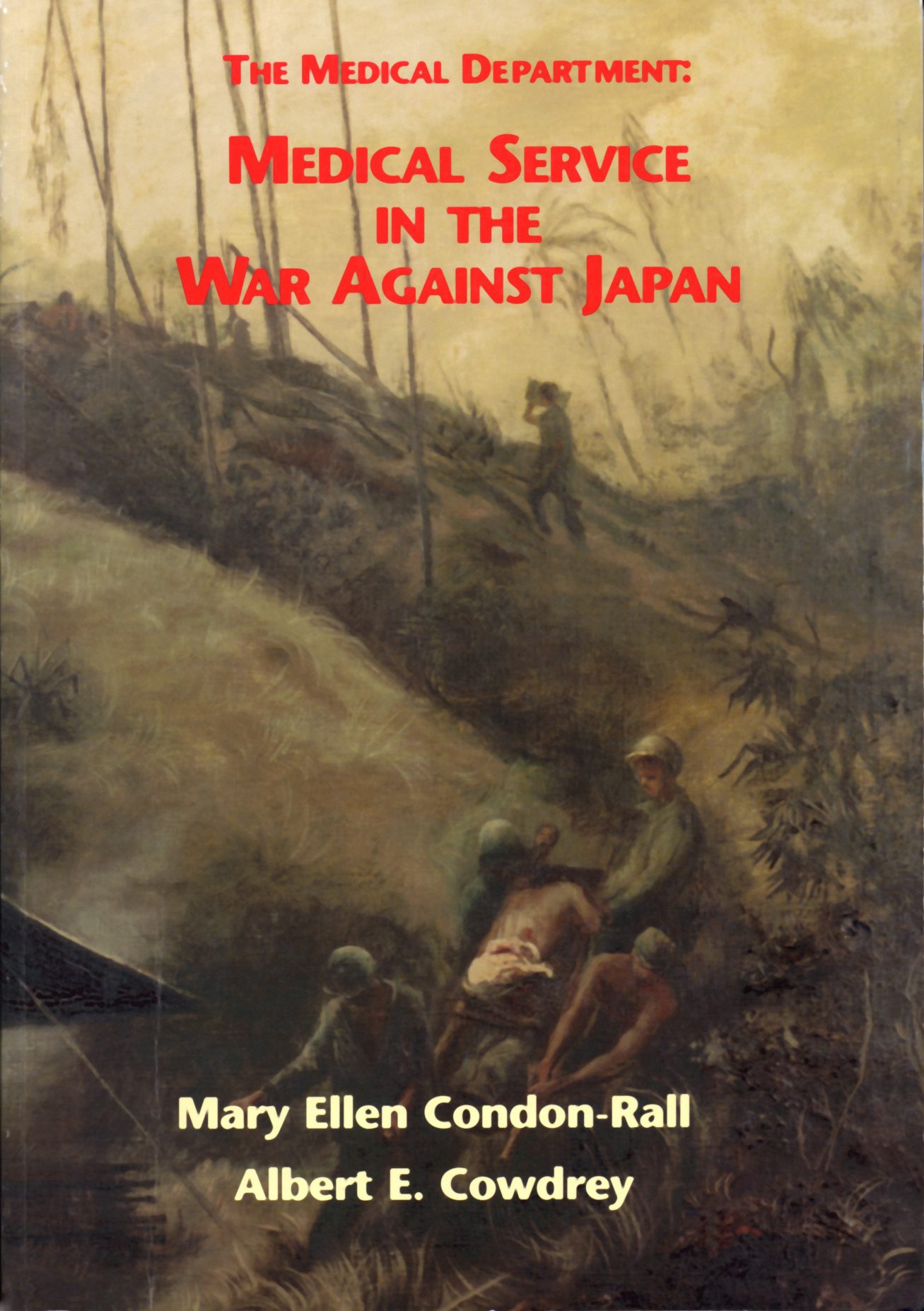


The Medical Department:

Medical Service in the War Against Japan

Mary Ellen Condon-Rall

Albert E. Cowdrey

MEDICAL SERVICE IN THE WAR AGAINST JAPAN



End of a Busy Day

UNITED STATES ARMY IN WORLD WAR II

The Technical Services

THE MEDICAL DEPARTMENT:

MEDICAL SERVICE IN THE WAR AGAINST JAPAN

by
Mary Ellen Condon-Rall
and
Albert E. Cowdrey



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. . . To Those Who Served

Foreword

The Medical Department: Medical Service in the War Against Japan is the third and concluding volume on the overseas activities of the U.S. Army Medical Department during World War II. In the Asian-Pacific theaters of operations Army medical personnel supported troops in a variety of remote disease-ridden environments, burdened by vast distances, diverse climates, and almost insoluble logistical problems. This study recounts how the Army's senior medical officers pooled their talents with the scientific knowledge of the day to overcome these obstacles and, in the process, realized significant advances in military medicine. In the course of the long, grueling war against Japan these dedicated professionals developed new drugs and techniques for preventing and controlling disease, fielded hospitals and units uniquely equipped to support jungle and island fighting, and perfected amphibious medical support.

The story of these developments, as well as of the planning and organizing of theater medical services, provides practical lessons for military students and military leaders of all ranks. I urge you to read this history for its illuminating examples of the finest in combat medical support and organization, principles that remain vital to our military today.

Washington, D.C.
1 June 1997

JOHN W. MOUNTCASTLE
Brigadier General, USA
Chief of Military History

The Authors

Mary Ellen Condon-Rall was born in Brooklyn, New York, where she received her primary and secondary education. She earned her B.A. and M.A. degrees respectively from Molloy College for Women and Fordham University, both in the New York area, and her Ph.D. degree from the University College of the University of London in England. Beginning in 1972, she started her career as a historian with The Historical Unit of the U.S. Army Medical Department and, in 1976, when The Historical Unit was absorbed, moved to the U.S. Army Center of Military History. In 1990 Dr. Condon-Rall was awarded a one-year Secretary of the Army Research and Study Fellowship. She is the author of *Disaster on Green Ramp: The Army's Response*; a monograph on host nation medical support during the Persian Gulf war; a chapter on the history of military anesthesia in the *Anesthesia and Perioperative Care of the Combat Casualty* volume of *The Textbook of Military Medicine*; and a chapter on the U.S. Army and the fight against malaria in the forthcoming work *Science and the Pacific War*. She also has contributed numerous articles on military medicine and naval history in American, British, and Australian journals.

Albert E. Cowdrey was born in New Orleans, Louisiana, and received his education from the schools in that city and from Tulane and Johns Hopkins Universities. He served in the Army as an enlisted man during the years 1957–59. After teaching at Tulane University and at Louisiana State University, he joined the staff of the U.S. Army Corps of Engineers historical office and, since 1978, that of the U.S. Army Center of Military History, from where he retired in 1993. His interest in southern history brought him the American Historical Association's Herbert Feis Award in 1984, and his prizewinning history of Army medicine in the Korean war, *The Medics' War*, has been widely adopted as a text in military medical schools. Dr. Cowdrey is the coauthor of *The Medical Department: Medical Service in the European Theater of Operations* and author of *Fighting for Life: American Military Medicine in World War II*. He also has published many articles on a variety of historical topics in American, British, Canadian, and international journals.

Preface

The Medical Department: Medical Service in the War Against Japan is a comprehensive organizational and operational history of medical support in the Asian-Pacific theaters in World War II. The narrative begins with medical prewar planning and ends with the establishment of public health and welfare in occupied Japan. In the context of fierce combat operations waged in the geographical area extending from Australia to Alaska and from the Gilbert Islands to Burma, we focused on how the Army Medical Department coped with the great distances, diverse climates, disease epidemics, grave logistical problems, and rapidly changing circumstances to maintain the fighting strength of American troops. Flexible organization, ingenuity, and the latest scientific advances helped medical personnel to support infantry combat teams on isolated islands or in dense jungles, to evacuate casualties over difficult terrain and then by sea or air, to adapt medical support to amphibious operations, and to prevent and control disease. Cooperation with the U.S. Navy and with the Allied medical services, especially in the Southwest Pacific, also is covered.

Work on a volume dealing with the medical service in the war against Japan began shortly after the end of World War II in The Historical Unit of the Office of the Surgeon General. Over the years this unit collected original documents, interviewed participants, and produced research note cards and various historical drafts, from which we benefited. Although we found the lengthy manuscripts of Warren W. Daboll and Donald Mitchell to be invaluable, our volume represents largely new research in primary and secondary sources, as well as a fresh approach, theme, and organization to the subject. For background, we drew upon the clinical volumes published by the Office of the Surgeon General to gain insights into the medical story and also the relevant volumes of the United States Army in World War II series, as well as numerous subsequent scholarship, to understand the combat story.

Special acknowledgements must be made to many individuals for their unstinting support. Members of the review panel—Dr. Jeffrey J. Clarke, Dr. Edward J. Drea, Dr. Stanley L. Falk, Robert J. T. Joy, M.D., and Joanne M. Brignolo—provided perceptive comments and suggestions that gave final form to our volume. Dr. Joy, in addition, and Col. Charles J. Simpson were always there to counsel, encourage, and give generously of their expertise while we were working, and Lt. Col. James Carafano offered his much appreciated help and encouragement during the final stages of production.

We are deeply grateful to the more than fifty campaign participants who were interviewed; they shared pivotal insights that added a personal dimen-

sion to the unfolding of the story. Our sincere appreciation also is given to Jan Herman, the U.S. Navy's Bureau of Medicine and Surgery historian, and Sylvan Katz for lending us relevant photographs that visually enhanced our text.

Meriting special recognition are the archivists who assisted us during our research. We extend our gratitude to George Chalou, Fred W. Pernell, Richard L. Boylan, and Victoria Washington of the National Archives and Records Administration, Washington, D.C., and Richard Sommers of the U.S. Army Military History Institute, Carlisle Barracks, Pennsylvania, for contributing their time, knowledge, and skill. Present and former colleagues at the Center of Military History—Hannah M. Zeidlik, Charles Ellsworth, Geraldine H. Harcarik, Carol I. Anderson, James B. Knight, Mary J. Sawyer, John B. Wilson, Donna C. Everett, and Stephen E. Everett—also were unfailing in their efforts to help us find materials.

Other key contributors at the Center are deserving of praise. Arthur S. Hardyman and Sherry L. Dowdy used their cartographic skills to design the maps; Beth F. MacKenzie, who also helped with the map compilations, and John Birmingham, their desktop publishing talents to create camera-ready copy and artwork; W. Scott Janes, his penetrating eyes to proofread the text; Roger Wright, his craft as a photographer to reproduce a number of illustrations; and Susan Carroll, her meticulousness to develop the useful index, bringing to light thoughtful queries in the process.

Finally, we are indebted to our hard-working editor, Joanne M. Brignolo, whose literary skills, attention to detail, and technical proficiency contributed immeasurably to the smooth flow of the narrative and the accuracy of the citations. Her uncommon efficiency, unwavering support, and unflagging enthusiasm helped us to navigate the turbid waters of the book publication process.

For any errors of fact or interpretation remaining in the volume, we alone are responsible.

Washington, D.C.
1 June 1997

Mary Ellen Condon-Rall
Albert E. Cowdrey

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The works of Franklin Boggs (1914–) depicted on p. ii—*End of a Busy Day*, 1944, oil on canvas, 33¼" x 26⅜"—and on the paperback cover—*Evacuation Under Fire*, 1944, oil on canvas, 31¼" x 37¼"—are from the Army Art Collection.

MEDICAL SERVICE
IN THE WAR AGAINST JAPAN

PROLOGUE

The Drift Toward War

Every combat theater of World War II had its own unique medical history, but nowhere did disease pose a greater threat to American soldiers and to military operations than in the bitter war against Japan. The nation faced the dual challenges of fighting and supporting its troops in primitive, largely tropical, environments, burdened by grave logistical problems. Fortunately, military surgeons and medical units were able to make available to American commanders a wealth of scientific knowledge that had developed over previous centuries, and especially over the preceding seventy years.

The late nineteenth century had seen the ancient learned profession of medicine transformed into a laboratory science by the germ theory of disease. Soon after, the Army Medical Department became an exponent of the new science and, through the work of Walter Reed and many others, a leader in the study of tropical ills. Through preventive medicine, the department revolutionized the health care of the American Army over the next forty years. During this period, as the Army reorganized and professionalized, the Medical Department kept pace, establishing a variety of specialized units to support the troops in the field; general hospitals to carry out complex definitive care of the seriously ill and injured; and laboratories to advance the growth of military medicine.

Simultaneously, the American medical profession at large matured, improving its methods of educating new doctors and creating a research establishment that began to rival those of Europe. World War I brought the United States government into the large-scale sponsorship of scientific research. Both private foundations and the government promoted public health campaigns that created a cadre of trained workers. The battlefield taught its own lessons. From World War I came many advances, including the use of blood transfusion to combat wound shock, the development of techniques to alleviate combat exhaustion, the use of debridement as a standard surgical technique, the open reduction of fractures with internal and external fixation, and improved treatment of neurosurgical injuries. A number of early twentieth century medical advances had direct applications to military medicine, among them the discovery of the first drugs to fight syphilis, the creation of synthetic antimalarials to supplement the natural drug quinine, the discovery and eventual mass produc-

tion of penicillin, and the rapid development during the 1930s of the sulfa drugs to fight infection. American medicine was sufficiently mature to absorb and, in some cases, improve upon discoveries made overseas.

The Army Medical Department, however, did not keep up with the developments of the interwar years. Suffering the same neglect as the rest of the nation's military establishment after World War I, the medics lost the leading position they had attained earlier. On the other hand, the 1920s and 1930s saw medical officers more fully integrated into the Army; many attended Army schools in other branches, and a few even studied at the prestigious Command and General Staff School at Fort Leavenworth, Kansas, where the nation's future military leaders met one another. The Army started its own Medical Field Service School at Carlisle Barracks, Pennsylvania, to train its officers in the practical requirements of military medicine. The tradition of scientific medicine flourished in military laboratories and general hospitals, especially in studies of trauma and militarily significant diseases.

With the opening of World War II, medical officers of the Regular Army became the administrators and leaders of the Medical Department as the Army expanded from a force of a quarter-million to a mass of more than eight million men and women. Most hands-on medicine became the province of reserve officers and civilian physicians, who received wartime commissions in the Army of the United States (AUS). Between the two groups—the regulars who knew the Army, and the AUS officers who had experienced (and in some cases had led) the sweeping changes in civilian medicine—relations were sometimes testy, sometimes mutually respectful. Ultimately, both groups would contribute in essential ways to the wartime successes of American medicine.

Plans and Preparations

Army studies in tropical medicine originally grew out of the Spanish-American War of 1898–99, which made the United States a power with overseas possessions to defend and administer. The "splendid little war,"[1] as U.S. Ambassador to Great Britain John M. Hay called it, also conferred upon the nation many Pacific islands, including the Philippines and Guam. The building of a powerful fleet followed, as well as the establishment of naval bases that had to be defended by Army garrisons.

World War I complicated the situation, enabling the Japanese Empire to strengthen its position by acquiring former German possessions. Hence, the U.S. Army was obliged to consider the possibility of war between the two expanding empires, Japan and the United States, and to prepare plans accordingly. The war plans were color-coded; those dealing with Japan were ORANGE. In the event of war in the Pacific the ORANGE plans called for the U.S. Pacific Fleet, based first on the West Coast and later at Pearl Harbor, to isolate and harass Japan through offensive sea and air operations. The defense of the Philippines depended on the ability of the Pacific Fleet to sortie westward to relieve the archipelago, where the small

[1]As quoted in Graham A. Cosmas, *An Army for Empire: The United States Army in the Spanish-American War* (Columbia: University of Missouri Press, 1971), p. 245.

U.S. Asiatic Fleet was based. U.S. Army forces in the Philippines were assigned a limited defensive role. If war came, ground troops would move to the jungles of Bataan, a mountainous peninsula west of Manila, to assist in holding the entrance to Manila Bay as an anchorage for the U.S. fleet once it had fought its way across the Pacific. From the beginning, many knowledgeable American leaders found the ORANGE plans quite unrealistic.[2]

Nevertheless, to accord with ORANGE strategy, subordinate commands and their respective medical organizations developed their own contingency plans. The Philippine Department's Office of the Chief Surgeon had as its basic missions the conservation of manpower, the preservation of the health of the command, and the care of the sick and wounded. In the event of war the office would call up its medical reservists in the islands and seek recruits to supplement Regular Army personnel. Hospitals would be expanded, supplies collected, and excess equipment and supplies shipped to Mariveles on the Bataan Peninsula. If retreat to Bataan was ordered, the Medical Supply Depot in Manila would move to Corregidor, one of the fortified islands guarding the mouth of Manila Bay, and Sternberg General Hospital in Manila would move with all personnel and equipment to establish a 500-bed hospital at Mariveles. Patients would be evacuated from the capital by boat.

Since the peninsula was known to be highly malarial, personnel serving there were to take quinine, use mosquito nets at night, and cover exposed skin with mosquito repellent. Medics would survey the hospital area at Mariveles and spray standing water with oil to destroy mosquito breeding grounds. Disease control would depend to a great extent on supplies evacuated from Manila and on the release of medical personnel from other duties.[3]

Like the overall war plan, the medical plan was unrealistic. The Philippine medical community of the prewar period found malaria control on Bataan to be economically impractical, on account of the prevalence both of the microscopic parasites that cause the disease and the mosquito vectors that spread it. To break the well-known life cycle of the malaria parasite on such a large scale seemed an insurmountable task, and was not attempted. With only limited resources at their command, medical authorities might well have found it impossible to do more. At the beginning of World War II "the U.S. Army had not developed the mechanics and procedures for controlling malaria among large bodies of troops in highly endemic areas." The specialized units that would materialize during wartime did not yet exist, and thus medical planners fell back upon

[2]Louis Morton, *Strategy and Command: The First Two Years*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1962), pp. 21–25, 33, 43; Stanley L. Falk, "Douglas MacArthur and the War Against Japan," in William M. Leary, ed., *We Shall Return: MacArthur's Commanders and the Defeat of Japan, 1942–1945* (Lexington, Ky.: University Press of Kentucky, 1988), pp. 3–5. See also Joint Army and Navy Basic War Plans Orange, 1924, pp. 1–2, file JB 325, Record Group (RG) 225, and 1939, pp. 2, 8, file AG 223, RG 407, National Archives and Records Administration (NARA), Washington, D.C.

[3]Surg, Phil Dept, First Phase Plan Orange, 1933, pp. 2–5, and Plan Orange, 1936, p. 1, file AG 170, RG 407, NARA.

the techniques they knew and the manpower that was available.[4]

As military adviser to the Philippine government, Maj. Gen. Douglas MacArthur refused to accept the inevitability of defeat that he, like many others, saw as inherent in the ORANGE plans. Defense of the Philippines rested with the peacetime garrison of 10,000 men, plus the Philippine Army, which MacArthur had been building and training since 1936.[5] Although the Philippine Army was deficient in personnel, equipment, and supplies, MacArthur expressed confidence in its ability to defend the islands. He believed that the addition of B–17 bombers would enable him to crush the enemy on the beaches, rather than withdraw his troops to Bataan. His optimism influenced many in Washington and led to a new formulation in RAINBOW 5, one of the war plans that superseded ORANGE. RAINBOW 5 changed and expanded the Army's role in the Philippines, from protecting the Manila Bay entrance to defending the coasts. Medical preparations changed accordingly, as the Office of the Chief Surgeon centralized people and supplies around Manila. The danger of the new arrangement was that if American and Philippine forces were defeated on the beaches and had to withdraw to Bataan, medical personnel would have a difficult time evacuating medical supplies to the peninsula.[6]

The Approaching Crisis

Meanwhile, the drift toward war was rapid. President Franklin D. Roosevelt proclaimed a state of national emergency in September 1939; in August 1940, after the fall of France, Congress summoned the National Guard into federal service and ordered the call-up of the reserves. The following month brought the nation's first peacetime draft.

Maj. Gen. James C. Magee, the surgeon general, began first to plan and then to mobilize the Army Medical Department for war. Throughout the United States and its possessions the number of medical officers increased (though it never reached the levels prescribed in the existing tables of organization). Within the Office of the Surgeon General, a separate Preventive Medicine Division was set up to meet the needs of the public health of the Army. Contacts proliferated between Army medical officers and the other armed services, the quasi-official National Research Council, the International

[4]Quotation from Thomas A. Hart and William A. Hardenbergh, "The Southwest Pacific Area" in Ebbe Curtis Hoff, ed., *Communicable Diseases: Malaria*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963), p. 513. See also Paul F. Russell, *Malaria: An Account of Its Cause, Cure and Prevention* (Manila: Bureau of Printing, 1931), p. 37.

[5]MacArthur became military adviser to the Philippine government on 18 September 1935, less than two weeks before completing his service as Army chief of staff (21 November 1930–1 October 1935) with the rank of temporary general. Thereafter, he resumed his permanent rank of major general. The following year, on 19 June, MacArthur was appointed field marshal of the Philippine Army.

[6]Falk, "Douglas MacArthur," in Leary, ed., *We Shall Return*," p. 3; Maurice Matloff and Edwin M. Snell, *Strategic Planning for Coalition Warfare, 1941–1942*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1953), p. 45; Ray S. Cline, *Washington Command Post: The Operations Division*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1951), pp. 55–59; Mark Skinner Watson, *Chief of Staff: Prewar Plans and Preparations*, United States Army in World War II (Washington, D.C.: Historical Division, United States Army, 1950), pp. 103–04.

Health Division of the Rockefeller Foundation, and the Public Health Service. New medical units were organized to supplement the four regiments then in existence. In addition to divisional medical units, seventy-six nondivisional units were activated, including numbered general, station, evacuation, and surgical hospitals, supply depots, and laboratories. More skilled women entered the Army Nurse Corps; enlisted men received training as medical technicians; and the ranks of the allied professions—pharmacists, oculists, medical administrators, entomologists, and sanitary engineers, among others—were filled, as civilians donned the uniform and reserve officers reported for active duty. Major maneuvers gave new soldiers, including many officers and men of the Medical Department, their first taste of life in the field under simulated wartime conditions.[7]

The United States spent the last months of peacetime feverishly making preparations that had been too long delayed. While some Americans clung to pacifism or isolationism, others believed that the only questions remaining to be answered were when and where the blow would fall. Then plans would encounter reality, and wartime casualties would put the nation and its military medical services to the test of fire.

[7]The process of medical mobilization is treated in detail in Clarence McKittrick Smith, *The Medical Department: Hospitalization and Evacuation, Zone of Interior,* United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1956). See War Department, *[Annual] Report of the Surgeon General, U.S. Army, to the Secretary of War, 1940* (Washington, D.C.: Government Printing Office, 1941), pp. 172–93; idem, *[Annual] Report of the Surgeon General, U.S. Army, to the Secretary of War, 1941* (Washington, D.C.: Government Printing Office, 1941), pp. 141–42 and 153–54. See also Blanche B. Armfield, *Organization and Administration in World War II,* Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963), pp. 1–68; and, in the same series, Robert J. Parks, *Medical Training in World War II* (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1971), pp. 13–41, and John H. McMinn and Max Levin, *Personnel in World War II* (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963), pp. 111–66.

CHAPTER I

A Medical Calamity

Nowhere was the imminence of war and the need for increased medical resources more strongly felt than in the nation's major Pacific bastion, the Hawaiian Islands. Especially after May 1940, when Pearl Harbor became the home of the U.S. Pacific Fleet, troops, supplies, and equipment flowed into Oahu, the most heavily settled of the islands. Here the mission of the Army's Hawaiian Department was to cooperate fully in defending the Navy's largest overseas base.

For many years the principal Army unit had been the Hawaiian Division, headquartered at Schofield Barracks some 10 miles from Pearl Harbor. In October 1941 the old four-regiment unit was reorganized into two three-regiment ("triangular") divisions and several nondivisional units. By December Army forces—including the two understrength infantry divisions, four complete coast artillery regiments, four antiaircraft regiments, one company of light tanks, and supporting service troops—numbered 43,000, then the largest contingent stationed outside the continental United States. The air component, the Hawaiian Air Force, reached a total of 754 officers and 6,706 enlisted men, organized tactically into the 18th Bombardment Wing, with headquarters at Hickam Field, and the 14th Pursuit Wing, with headquarters at Wheeler Field.[1]

Upon Col. Edgar King, MC, chief surgeon of the Hawaiian Department, fell the responsibility for meeting the growing medical needs of the Army and—in the event of an emergency—those of a dependent civilian population as well. A somewhat intimidating Regular Army officer, King benefited from thirty-four years of experience as a military surgeon in the Philippines, China, the Canal Zone, and the United States. During 1940 and 1941 he acquired more medical personnel, enlarged hospital facilities, and planned future construction. The chief surgeon also started an intensive training program, and guided the revision of old emergency medical plans and the formulation of new ones. In these endeavors he was assisted by a comparatively small staff of 9 officers and 8 enlisted men, plus leading mem-

[1]Joint Army and Navy Basic War Plan Orange, 1938, p. 5, file JB 325, Record Group (RG) 225, National Archives and Records Administration (NARA), Washington, D.C.; Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II*, 7 vols. (Chicago: University of Chicago Press, 1948–58), 1:170; Mark Skinner Watson, *Chief of Staff: Prewar Plans and Preparations*, United States Army in World War II (Washington, D.C.: Historical Division, United States Army, 1950), p. 474.

bers of the Hawaiian medical profession. Demands for medical preparedness were heard throughout the United States, and were encouraged and given direction by the American Medical Association. Civilian liaison formed the principal duty of one Medical Corps officer on King's staff, highlighting the importance that the department surgeon attached to cooperation with the local community.[2]

Yet the medical establishment lagged behind the growing needs of mobilization, to say nothing of war. Colonel King requested more doctors, nurses, and enlisted men for the Hawaiian Department at monthly intervals during 1941. In December he asked for 80 medical officers, 100 nurses, and 600 enlisted men. The replies he received indicated that all the reinforcements would be sent, but by the close of the year they still had not arrived. The strength of the medical contingent in Hawaii totaled 1,931—288 officers, 195 nurses, 1,414 enlisted men in the medical and dental services, 25 enlisted men in the veterinary service, and 9 warrant officers. Since the Army forces, including the air complement, numbered 2,588 officers and 53,853 enlisted men, the ratio of medical personnel to total Army strength was 3.5 percent below authorized levels. In many cases, the workload outran medical capability; the shortage of nurses was particularly acute, obliging King to employ civilians in both professional and nonprofessional capacities.[3]



BRIG. GEN. EDGAR KING, MC
(Rank as of 25 October 1942)

Problems of military reorganization added to the stresses caused by growth.

[2]See CSurg, Haw Dept, Annual Rpt, 1940, pp. 1, 9–10, file 319.1–2, Historical Unit Medical Detachment (HUMEDS), RG 112, NARA. See also King's brief testimony before the Army Pearl Harbor Board in United States Congress, *Hearings Before the Joint Committee on the Investigation of the Pearl Harbor Attack*, 79th Cong., 1st Sess. (Washington, D.C.: Government Printing Office, 1946), pp. 1403–09 (hereafter cited as *Pearl Harbor Attack Hearings*); Mary Ellen Condon-Rall, "The U.S. Army Medical Department and the Attack on Pearl Harbor," *Journal of Military History* 53 (Jan 89): 65–78; Committee on Medical Preparedness, "An Appeal for Service," *Journal of the American Medical Association* 114 (29 Jun 40): 2556.

[3]CSurg, Haw Dept, Annual Rpt, 1941, p. 13, file 319.1–2, HUMEDS, RG 112, NARA; "History of Office of the Surgeon, United States Army Forces, Middle Pacific and Predecessor Commands, 7 December 1941–2 September 1945," sec. 1, "Hawaiian Department," ch. 1, pp. 2, 7, Ms 8–5.6 AA 30/1, files of the U.S. Army Center of Military History (CMH), Washington, D.C. (hereafter cited as "History of OofSurg, USAFMIDPAC"). See also John H. McMinn and Max Levin, *Personnel in World War II*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963) p. 58; *Strength of the Army*, December 1941.

Triangularization of the Hawaiian Division brought immediate change to the 11th Medical Regiment, which for years had provided complete service to its parent unit. Under the old arrangement regimental medical personnel had manned the station hospital at Schofield Barracks, operated dispensaries, and formed medical detachments for duty with troops in the field. In October most were reassigned to the 24th and 25th Medical Battalions, serving the newly activated 24th and 25th Infantry Divisions. At the same time, the 350-bed Schofield Station Hospital became an independent unit, offering some services previously performed by the 11th Medical Regiment.[4]

Simultaneously, the whole Army hospital system—comprising both Schofield Station Hospital, which served local and ordinary needs, and Tripler General Hospital, which served general and special needs, on Oahu; a smaller facility at the Kilauea Military Camp on Hawaii; and dispensaries scattered about the various military stations on the islands—underwent change and expansion. In 1940 Colonel King ordered temporary wards set up in barracks and on hospital porches, or lanais. A new station hospital was constructed at Hickam Field, which added 32 beds and a reserve of 28 more during 1941 (*see Map 1*). By December the number of beds on Oahu, including emergency beds, totaled over 1,449, more than double the prewar total of 650. With this increase went changes designed to improve the ability of the hospitals to function rapidly in the event of war, including measures for treating gas casualties. Lt. Col. Andrew W. Smith, MC, the surgeon on the staff of the Hawaiian Air Force commander, Maj. Gen. Frederick L. Martin, coordinated his work with King's office. As each new air installation went into operation in the Hawaiian Islands, it received an air surgeon trained in flight-related medicine.[5]

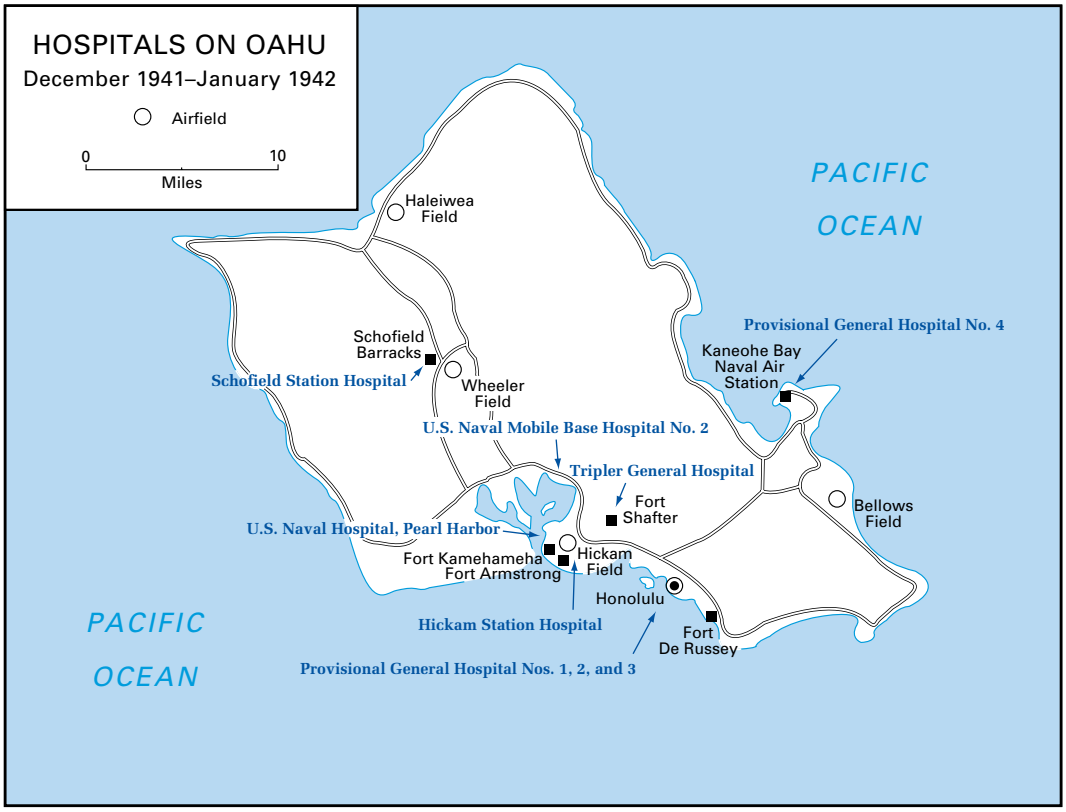
The medical supply system grew also, as Colonel King established a branch depot at Schofield Barracks to supplement the major supply center at Tripler General Hospital. Stocks of many critical items, particularly sulfa drugs, were dispersed to Army hospitals on Oahu and the outlying islands, for protection against air attack. Civilians aided the buildup. By December 1941 the depots had collected over 58,000 surgical dressings made by the Hawaiian chapter of the American Red Cross. Civilian depots, at King's request, increased their own stocks, adding to the islands' overall preparedness.[6]

In addition to expanding medical facilities and depots, Colonel King revised outdated emergency medical

[4]Blanche B. Armfield, *Organization and Administration in World War II*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963), p. 64; Watson, *Chief of Staff*, p. 158. See also Schofield Barracks Sta Hosp Annual Rpt, 1939, pp. 1, 4; 24th Inf Div Annual Rpt, 1941, p. 2; 25th Inf Div Annual Rpt, 1941, p. 2. All in file 319.1–2, HUMEDS, RG 112, NARA.

[5]CSurg, Haw Dept, Annual Rpt, 1940, p. 9, file 319.1–2, HUMEDS, RG 112, NARA; Rpt, Maj. Charles Gill, n.d., sub: Hospital Facilities for the Civilian and Military Personnel of Oahu, Hawaii, Encl to General Report on Hospital Development on Oahu, in "History of OofSurg, USAFMIDPAC," sec. 1, ch. 3, an. 8, pp. 2, 4, Ms 8–5.6 AA 30/1, CMH. See also Stetson Conn, Rose C. Engelman, Byron Fairchild, *Guarding the United States and Its Outposts*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1964), p. 159.

[6]Charles M. Wiltse, *Medical Supply in World War II*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1968), pp. 393, 395; CSurg, Haw Dept, Annual Rpt, 1941, p. 12, file 319.1–2, HUMEDS, RG 112, NARA.



MAP 1

plans and created new ones. The key existing document was the medical annex to Emergency Plan WHITE, a civil disturbance plan aimed at controlling riots. The plan outlined a standard evacuation procedure, specified the military hospitals to which the north and south sectors of Oahu would send casualties, authorized Army medical officers to use civilian hospitals, and made military personnel responsible for rendering first aid to civilian casualties. Tripler General Hospital would receive severely wounded from the Honolulu area, while Schofield Station Hospital would treat casualties from Schofield Barracks. Honolulu area military and civilians suffering only from minor wounds would use dispensaries either at Tripler or at Forts De Russey, Kamehameha, and Armstrong.[7]

In 1940 King's office devised a new medical plan that in essence restated Plan WHITE, with some important additions. The Army Medical Department became responsible for the treatment of civilians on the island of Oahu under disaster conditions. Much more than first aid was now involved. Casualties must be collected, given emergency treatment, evacuated, and hospitalized. In order to make the plan workable, King had to

[7] "History of OofSurg, USAFMIDPAC," sec. 1, ch. 3, p. 7, and ch. 4, p. 1, Ms 8–5.6 AA 30/1, CMH.

rely on the participation of the civilian medical and dental professions. The Honolulu Medical Society gave prompt cooperation; it established a preparedness committee, headed by Dr. Harry L. Arnold, Sr., to help the Army devise and carry out the contingency proposals. The planning called for military control of all hospitalization, for establishment of first aid stations throughout Oahu, and for supplementary care of military personnel by civilian doctors. Maj. Elmer D. Gay, civilian liaison officer on King's staff, established contact with the Red Cross and similar agencies and organized medical teams of civilians to work in the hospitals under the supervision of military medical personnel.[8]

Civilian hospitals and public and private buildings, like civilian doctors and nurses, were needed. During 1941 Colonel King placed a civilian physician, Dr. Nils P. Larsen, in charge of civilian hospital expansion and evacuation. Maj. Robert Faus, on King's staff, headed plans and training. Faus and Gay prepared sixteen civilian hospitals—including Queens, Children's, St. Francis, and others—to care for convalescing patients evacuated from other medical facilities in event of an attack. During the summer and autumn of 1941 Gay surveyed other buildings that could be utilized. For the most part, he selected schools because they were fire resistant, easily adaptable, and located at some distance yet not too far from military installations. He formulated a scheme for the speedy conversion of Farrington High School, Kamehameha School for Boys, and St. Louis College; worked out detailed plans; and designated medical equipment for emergency use. When the crisis came, the Office of the Chief Surgeon was in the process of occupying one school and had all necessary plans ready for the others.[9]

By November Colonel King had established twenty civilian aid stations, complete with the necessary trained personnel and supplies. The stockpiling of medical supplies had made good progress. Major Faus had obtained twelve trucks from business firms and modified them to carry litters. With the cooperation of the Honolulu Medical Society, the chief surgeon had organized civilian nurses to move into Army hospitals as soon as their services were called for. Civilian training in first aid was under way, and the women of Schofield Barracks were studying first aid. Maj. Charles C. Gill, MC, assigned to Schofield Barracks, helped to pioneer an Army ambulance corps for women. Supplementing such efforts, Dr. Forrest J. Pinkerton, a civilian acting as liaison between the Red Cross and other public health agencies, organized a plasma bank, responding to the American Medical Association Preparedness Committee recommendations to the medical profession. In so far as the limitations of supplies and manpower allowed, Hawaii was ready to meet the great medical emergency that lay ahead.[10]

[8]Ibid., ch. 1, p. 5, Ms 8–5.6 AA 30/1, CMH; Testimony of Maj. Gen. Walter C. Short, in *Pearl Harbor Attack Hearings*, pp. 173, 182.

[9]"History of OofSurg, USAFMIDPAC," sec. 1, ch. 3, pp. 3–4, Ms 8–5.6 AA 30/1, CMH; Memo, Col Edgar King to Ed., History of the Medical Department, U.S. Army in World War II, 22 Mar 50, sub: Supplemental Data on the Work of the Medical Department in the Hawaiian Department, Later U.S. Army Forces in the Pacific, then the Central Pacific Area, p. 6, file 000.71, HUMEDS, RG 112, NARA.

[10]"History of OofSurg, USAFMIDPAC," sec. 1, ch. 3, pp. 1–4, an. 1, pp. 1–3, and an. 8, p. 3, Ms 8–5.6 AA 30/1, CMH.

Japan Attacks

On 26 November 1941 a Japanese strike force sailed for Hawaii. At 0600 on 7 December the aircraft carriers moved into position 200 miles north of Oahu, and within minutes some of Japan's best pilots took off from the flight decks, dropping the first bombs at 0755 on a slowly awakening Pearl Harbor. In addition to the ships at anchor on Battleship Row, their targets were Hickam, Wheeler, and Bellows airfields, and Kaneohe Bay Naval Air Station on Oahu's north shore. Army planes parked wing to wing at Hickam and Wheeler Fields were easy marks for bombs and machine gun fire, as the Japanese raid marked a spectacular tactical success.

Among the ruins 2,327 American officers and enlisted men lay dead, of whom 2,000 belonged to the Navy, 98 to the Marines, and 229 to the Army. Some 70 civilians perished. Another 1,143, among them 459 soldiers, were wounded. The Army's greatest losses were at Hickam Field, adjacent to Pearl Harbor, and Wheeler Field, next to Schofield Barracks.[11]

Though stunned, Army and Navy authorities quickly put into effect their planned emergency measures. Hickam Station Hospital functioned primarily as a casualty clearing station, rendering only first aid before evacuating the wounded to Tripler by all available means. An Army nurse at the station hospital remembered: "We didn't even get to stage them, all we could do was give M. S. [morphine sulphate] and send them to Tripler." Medical personnel used ambulances from the post, reserve ambulances from Schofield Barracks, and trucks from the Hickam motor pool. The first casualty arrived at Tripler ten minutes after the raid began, and several hundred wounded, mainly from badly damaged Hickam Field, were admitted soon after the attack. A Japanese bomb had made a direct hit on a mess hall where more than 300 young aviators were having breakfast. "Their wounds were even worse than those of the burned," another nurse reported. "Some of them were too terrible to describe. They were mortal wounds by the side of which the loss of an arm or leg was nothing. Some had their chests or stomachs blown away."[12]

Blast, bomb fragments, machine gun bullets, and such secondary missiles as pieces of macadam, stone, brick, and mortar had caused the injuries. Tourniquets were in short supply and the staff had to improvise, using belts, cords for gas masks and pistol holsters, and muslin strips. Army wives made dressings. The first problem confronting workers in the receiving wards was to select the cases in greatest need of immediate surgical attention. Casualties were examined and sorted. Head injuries, sucking chest wounds, abdominal perforations, and shattered limbs that required amputation went to the operating tables first. All patients were given sulfanilamide against infection, morphine to alleviate pain,

[11]Ibid., p. 6, Ms 8–5.6 AA 30/1, CMH; Louis Morton, *The Fall of the Philippines*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1953), pp. 78–79; Samuel Eliot Morison, *The Two-Ocean War: A Short History of the United States Navy in the Second World War* (Boston: Little, Brown and Co., 1963), pp. 56–59. On the Pearl Harbor attack, see also Gordon W. Prange, *At Dawn We Slept: The Untold Story of Pearl Harbor* (New York: McGraw-Hill Book Co., 1981).

[12]First quotation from Blake Clark, *The Fight at Pearl Harbor* (Washington, D.C.: Infantry Journal Press, 1943), p. 78 (see also pp. 79, 82); remaining quotations from "Letters from Readers," *American Journal of Nursing* 42 (Apr 42): 425–26.

plasma and warmth to forestall shock. Such a large number of casualties had been brought to Tripler by the time the raid was over that they were placed on litters on the floors, in the halls, and in the corridors. Chaplains comforted the wounded and attended the dying. Powerful emotion as well as morphine acted as an anesthetic, and many seemed unaware of their pain.[13]

As a result of Colonel King's preparations, an admirable military staff supplemented by civilians was on hand to care for the Army's casualties. Notable was the contribution of a reserve officer, Dr. John J. Moorhead, a prominent New York surgeon who, on invitation of the Honolulu Medical Society, had arrived a few days before to give a course of lectures on traumatic surgery. When word came that surgeons were needed at Tripler, Moorhead joined the effort, taking over the operating rooms at the request of Col. Alvin C. Miller, MC, the hospital commander. Moorhead briefly instructed the surgical teams on the methods he wanted to be used, and the civilian-military medical force started work with a "fine spirit of cooperation."[14]

Surgery was carried out in three operating rooms by nine teams, four of Army surgeons, the other five of civilians recruited and organized during the past year. The surgeons shared instruments, sterilizing and shifting them from table to table. When not performing an operation, they relieved each other on the wards doing pre- and postoperative treatment. Both traditional methods of military surgery and recent discoveries in chemotherapy contributed to the success in handling severe wounds. The early morning attack caught many victims with bowels full, increasing fecal contamination of abdominal wounds, and recently eaten breakfasts added the further danger of undigested food. Hence, surgeons, after suturing perforations, packed the peritoneal cavity with crystalline sulfanilamide, preventing much infection that would otherwise have been inevitable. The same antibacterial agent plus sulfathiazole helped to prevent infection in the amputees. But delayed closure of wounds was also a factor, for wounds prematurely sutured sometimes became infected despite the wonder drugs. Stores of plasma from civilian sources were critical in preventing shock and making successful surgery possible. Though dozens of the injured died of their wounds in the first twenty-four hours after the raid, there were no deaths after the first week. The low mortality rate after the first day resulted from skilled surgery and the use of sulfa drugs to prevent infection.[15]

[13]Hickam Field Sta Hosp Annual Rpt, 1941, p. 1, file 319.1–2; Ltr, Charles Gill to his father, 10 Dec 41, sub: Account of Attack on Hawaii, p. 4, file 319.1; I. S. Ravdin and Perrin H. Long, "The Treatment of Army Casualties in Hawaii," pp. 1–4, and "The Problems of the Hickam Station Hospital, the Tripler General Hospital, and the Schofield Station Hospital," pp. 3–5, file 314.7–2 (Wounds and Casualties) Hawaii. All in HUMEDS, RG 112, NARA.

[14]Quotation from Ravdin and Long, "Problems," p. 5, file 314.7–2 (Wounds and Casualties) Hawaii, HUMEDS, RG 112, NARA. See idem, "The Treatment of Army Casualties in Hawaii," *Army Medical Bulletin* 61 (Apr 42): 1–8; idem, "Some Observations on the Casualties at Pearl Harbor," *U.S. Navy Medical Bulletin* 40 (Apr 42): 355–58; John J. Moorhead, "Surgical Experience at Pearl Harbor," *Journal of the American Medical Association* 118 (28 Feb 42): 712–14. See also Walter Lord, *Day of Infamy* (New York: Henry Holt and Co., 1957), p. 194.

[15]Ltr, Gill to his father, 10 Dec 41, p. 4, file 319.1; Ravdin and Long, "Problems," intro and pp. 5, 7, file 314.7–2 (Wounds and Casualties) Hawaii; Tripler Gen Hosp Annual Rpt, 1941, p. 19, file 319.1–2. All in HUMEDS, RG 112, NARA. See also Clark, *Fight at Pearl Harbor*, pp. 78–79, 82; John J. Moorhead, *Clinical Traumatic Surgery* (Philadelphia: W. B. Saunders Co., 1945), pp. 702–25.

Heavy use depleted the plasma and blood banks, but a radio appeal for volunteer donors brought five hundred people to the doors of Queens Hospital in the first half hour. Fifteen doctors and trained technicians worked at twelve tables drawing blood, but could not take it as fast as it was offered. Some donors stood in line for seven hours; many did not know what plasma was, but knew they were helping. The entire crew and a number of passengers of a Dutch ship, in port for only a few hours, also gave blood. For days following the attack, hundreds of donors were to come from all over the island as a result of daily radio and newspaper appeals. The power of the events at Pearl Harbor to unify Americans was evident from the beginning.[16]

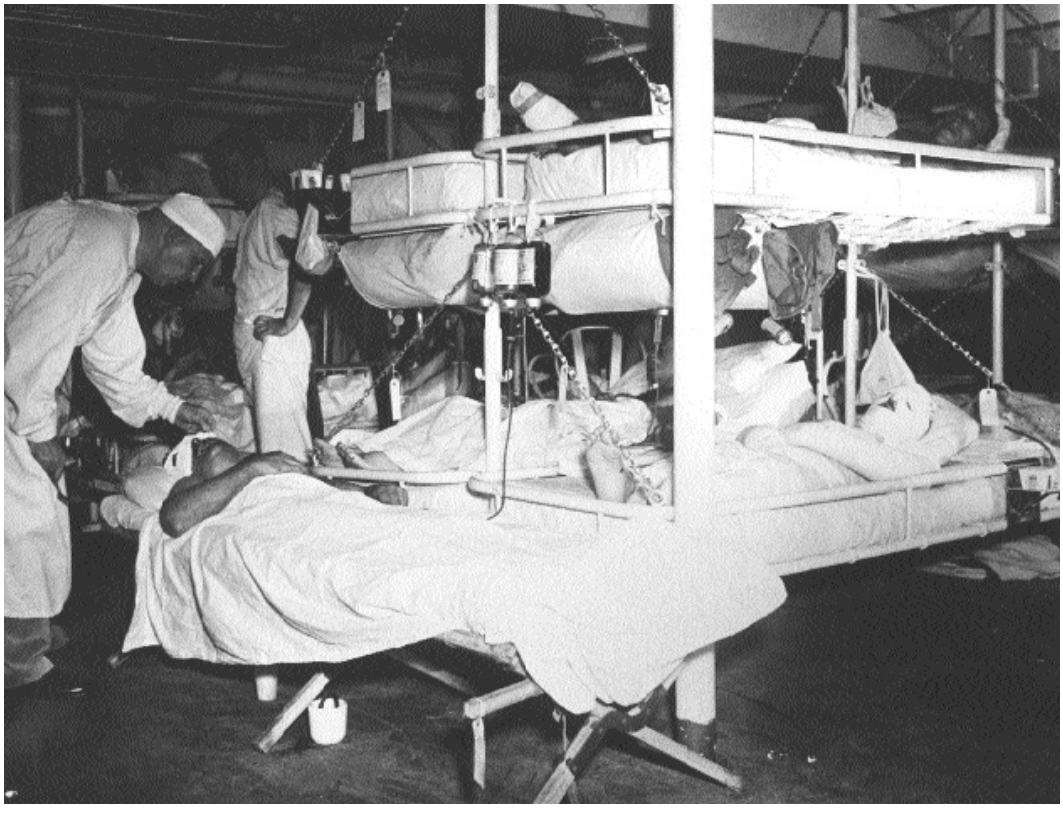
Lifesaving work also went on at Schofield Station Hospital, where 118 soldiers suffering from machine gun wounds, fragmentation wounds, and burns received treatment. The most seriously injured came from Wheeler Field, where a Japanese bomb penetrated a hangar that had been converted into a dispensary and exploded, collapsing the sides of the building. The wounded, including two nurses, were taken outside, placed in rows on blankets and given first aid before being evacuated to Schofield. Four major surgical teams worked until the last serious case was cared for, while minor surgical teams labored on the less seriously injured. In keeping with emergency plans, dentists assisted the surgeons and performed various hospital duties. Twenty-seven casualties were dead on arrival, nine more died in the first twenty-four hours, and two final victims in the days following the raid. Many more would have lost their lives but for the speed and thoroughness with which their wounds were treated.[17]

Navy casualties received emergency treatment at aid stations in the dock area or at a temporary dispensary set up in the Navy Yard officers club. For further care, military and civilian ambulances and other vehicles moved the wounded to the U.S. Naval Hospital, Pearl Harbor; the USS *Solace*, a hospital ship that was providentially in the harbor; and the U.S. Naval Mobile Base Hospital No. 2. Many sailors acquired flash burns from exploding bombs or torpedoes while rushing to battle stations in a state of undress. Blazing fuel oil roasted men who fell, jumped, or were thrown overboard by explosions. When time permitted, medics used a tincture of green soap with water to remove oil. More often, time permitted only scant cleaning before applying tannic acid or gentian violet, sometimes mixed with sulfa powder, to the burned areas over oil. Treatment for compound fractures and for shrapnel and machine gun bullet wounds followed the traditional pattern of debridement, sulfa therapy to prevent infection, and surgery. Again, plasma from civilian sources saved many lives.[18]

[16]Clark, *Fight at Pearl Harbor*, pp. 85, 87. See also *Honolulu Advertiser* and *Honolulu Star Bulletin*, 8–15 Dec 41.

[17]Schofield Barracks Sta Hosp Annual Rpt, 1941, pp. 2, 16, 24; Department of the Navy, Bureau of Medicine and Surgery, "The United States Navy Medical Department at War, 1941–1945," 1:20, files of Bureau of Medicine and Surgery Archives (BMSA), Washington, D.C.; Felix Sutton, *We Were There at Pearl Harbor* (New York: Grosset and Dunlap, 1957), p. 66.

[18]"Navy Medical Department at War," 1:2–4, 11–15, 19, 22–23, 64, BMSA; Charles M. Oman, *Doctors Aweigh* (Garden City, N.Y.: Doubleday, Doran and Co., 1943), pp. 5–6, 9–11; George A. Eckert and James W. Mader, "The Solace in Action," *U.S. Navy Medical Bulletin* 40 (Jul 42): 552–57; Ravdin and Long, "Some Observations," pp. 353–56.



PEARL HARBOR CASUALTIES RECEIVING CARE ABOARD THE USS *SOLACE*

Besides the soldiers and sailors, eighty-eight civilians had been injured. Most were treated at civilian hospitals. The City Emergency Hospital took care of the majority; Children's Hospital admitted eleven youngsters with burns, shell fragments, or bullet wounds; and a hospital run by and for Japanese Americans was taken over by the Army, admitting four civilians with shrapnel wounds. The other Honolulu hospitals received no civilian casualties but maintained vacant beds on reserve. In rural areas of Oahu, hospitals or emergency medical centers set up in plantation houses cared for a few attack victims. Naval casualties from the Kaneohe Bay Naval Air Station went mainly to the Kaneohe Territorial Hospital.[19]

After the immediate emergency had passed, steps were taken to correct the inadequacies that the catastrophe had revealed and also to prepare for another attack. On the afternoon of 7 December the islands passed under martial law and Lt. Gen. Walter C. Short, commander of the Hawaiian Department, became military governor. The Office of the Chief Surgeon now took over civilian structures to house four temporary hospitals under military control. Provisional General

[19]"History of OofSurg, USAFMIDPAC," sec. 1, ch. 3, pp. 7–9, Ms 8–5.6 AA 30/1, CMH.



U.S. NAVAL MOBILE BASE HOSPITAL NO. 2, *where 110 casualties were treated*

Hospital No. 1, with a capacity of 595 beds, opened at the Kamehameha School for Boys on the seventh; twelve days later all of the wounded children at Tripler were transferred to this new hospital, which was also designated to receive civilian outpatients in the event that Honolulu had to be evacuated. St. Louis College, in the Kaimuki district of Honolulu, began operating as Provisional General Hospital No. 2 on 8 December. On the thirteenth the Japanese Hospital was converted into No. 3, and served primarily as an isolation hospital for the Army, with a section reserved for Japanese-American civilians. The Kaneohe Territorial Hospital became Provisional General Hospital No. 4 on 10 January 1942, specializing in the treatment of nervous and mental diseases (*see Map 1*). Seven military hospitals were set up on the other islands. Civilian hospitals expanded as well, and within five months after the onset of war the Hawaiian medical facilities were considered ample, at least for the time being.[20]

Medical supply kept up with the quickening pace. Since 7 December the main Hawaiian supply center on Oahu had functioned twenty-four hours a day. Colonel King planned and, during 1942, set up branch depots on the islands of Maui, Kauai, and Hawaii to supply the service commands of those districts. On Oahu he also authorized the construction of five additional warehouses at the Schofield Barracks branch depot and the completion of a warehouse at Fort Ruger, which was ready for use by the middle of February. The chief surgeon's

[20]Ibid., pp. 10–11, Ms 8–5.6 AA 30/1, CMH. On 17 December 1941 Lt. Gen. Delos C. Emmons succeeded General Short as military governor.

office ordered stocks, particularly sulfa drugs, to be further dispersed in the various hospitals of the Hawaiian Department to lessen the possibility that all might be destroyed in the event of another attack. In April the 5th Medical Supply Depot, under the command of Lt. Col. James P. Gill, MC, arrived in Hawaii from the United States. Less than three months later the Oahu supply center was deactivated, and all personnel and equipment were transferred to the 5th. But the immense job of building a logistical base for the campaigns that lay ahead had, as yet, hardly begun.[21]

The baptism by fire was over for the doctors, nurses, and corpsmen, as well as for the civilian colleagues who had worked beside them during the crisis on Oahu. Though few would have believed it at the time, they were comparatively lucky, for the enemy did not return and no invasion fleet appeared to threaten the Hawaiian Islands. Not so fortunate were other Americans 2,000 miles to the west. In the Philippines one of the great tragedies of American military history—in many respects a medical calamity as well—had begun to overwhelm both military and civilians alike.

The Philippines Prepare

As of 26 July 1941 defense of the Commonwealth of the Philippines had been entrusted to a new Army command, the United States Army Forces in the Far East (USAFFE), under General MacArthur, who was promoted to lieutenant general the next day. USAFFE consisted of the Philippine Department, which before July had been the highest Army headquarters in the Far East, and the Philippine Commonwealth forces designated for service with the U.S. military. Its principal army was Maj. Gen. Jonathan M. Wainwright's Philippine Division, with three infantry and two field artillery regiments; the coast artillery units garrisoning the Harbor Defenses of Manila and Subic Bays; and a miscellany of others, including the 4th Marines, the 26th Cavalry of the Philippine Scouts (PS), and three additional regiments of field artillery. Philippine natives served both as professional soldiers—for example, enlisted men in Wainwright's 45th and 57th Infantry (PS) and other U.S. Army units—and as militiamen in the ill-trained and ill-equipped Philippine Army, a citizen-soldier force that President Franklin D. Roosevelt had called into the service of the United States. The strength of USAFFE, to include the air complement but not the Philippine Army, was 22,532 officers and enlisted men.[22]

The Philippine Department's Office of the Chief Surgeon, under Col. Adam E. Schlanser, MC, initiated medical mobilization planning in the winter of 1940–41. When Schlanser left the islands in September 1941, his successor, Col. Wibb E. Cooper, MC, took up the task, performing the dual functions of Chief Surgeon, USAFFE (although informally, as the position was never established officially until early 1943), and Surgeon, Philippine Department. Like his predecessor, he relied greatly upon the Philippine Division's 12th Medical

[21]Ibid., ch. 1, p. 8, Ms 8–5.6 AA 30/1, CMH; Wiltse, *Medical Supply*, p. 395.

[22]Morton, *Fall of Philippines*, pp. 21, 23; Mary Ellen Condon-Rall, "U.S. Army Medical Preparations and the Outbreak of War: The Philippines, 1941–6 May 1942," *Journal of Military History* 56 (Jan 92): 35–56.



COL. WIBB E. COOPER, MC



COL. HAROLD W. GLATTLEY, MC
(Rank as of 7 April 1942)

Regiment, a unit formed of Philippine Scouts under Maj. Harold W. Glattley, MC. A midwesterner and graduate of the University of Iowa's School of Medicine, Glattley served for fourteen years at Army hospitals in the United States and overseas before taking up his position with the Philippine Scouts. He witnessed the growth of the 12th Medical Regiment from only 200 before 1941 to 22 officers and 399 enlisted men by 31 July.[23]

This small force of Philippine natives and American officers participated in the maneuvers of the Philippine Division; trained cadres for newly created medical detachments and provided them key noncommissioned officers; and taught the militiamen of the Philippine Army the rudiments of field medicine, medical supply, and hospitalization. In August 1941, as the Philippine Division began the process of triangularization, the 12th Medical Regiment was reorganized locally as the 12th Medical Battalion,[24] with a headquarters section, three collecting companies, and one clearing company. A collecting company

[23]Wibb E. Cooper, "Medical Department Activities in the Philippines From 1941 to 6 May 1942, and Including Medical Activities in Japanese Prisoner of War Camps," pp. 5, 20–22, file 314.7, HUMEDS, RG 112, NARA.

[24]While the 12th Medical Regiment may have been reorganized locally in 1941 as the 12th Medical Battalion, War Department directives for the action were not published until the spring of 1946. The unit's official designation until April 1946 was 12th Medical Regiment, which is used in this volume.

and a platoon of the clearing company were attached to each of the three new regimental combat teams.[25]

Medical service for the Air Force, USAFFE, which before 4 August 1941 had been called the Philippine Air Force, was provided by a detachment at Nichols Field and another at Clark Field. Clark held the headquarters of the senior flight surgeon, Lt. Col. William J. Kennard, MC, who was a graduate of the Army's School of Aviation Medicine at Randolph Field, Texas, and had just turned thirty-five. On 16 November the Air Force, USAFFE, was reorganized as the Far East Air Force, with Maj. Gen. Lewis H. Brereton as commanding general. At the same time, when the subordinate Far East Air Service Command was activated under the leadership of Col. Lawrence Churchill, Colonel Kennard, who routinely coordinated all medical activities with Cooper's office, additionally became the Air Service Command surgeon. The Far East Air Force had its own dispensaries, but used the fixed Army hospitals and supply depots.[26]

For administrative and training purposes the Philippine Army's ten reserve divisions had been divided into three task forces, one for northern Luzon, a second for southern Luzon, and a third for the Visayan Islands and Mindanao. Colonel Cooper assigned a medical officer to each force headquarters as its surgeon. He further tried to allocate a medical instructor to the headquarters of each Philippine Army division. When manpower proved insufficient (the Office of the Chief Surgeon had authority to recruit enlisted men but not officers), local physicians and nurses were commissioned in the Philippine Army and inducted into the service of the United States.

On the southern islands, the Visayas and Mindanao, medical detachments were aided by local hospitals, which furnished care on a contract basis. There were a number of such hospitals—military, civilian government, missionary, industrial, and privately owned. The surgeon coordinated and supervised the arrangements of the Red Cross for the evacuation and treatment of civilian casualties in the event of air raids, and his arrangements later proved workable when combat began.[27]

As in Hawaii, the problem of providing enough hospital beds preoccupied medical planners during the prewar buildup. Before 1941 the Army's medical facilities in the Philippine Islands consisted of Sternberg General Hospital and Forts John Hay, William McKinley, and Stotsenburg Station Hospitals on Luzon; Fort Mills Station Hospital on Corregidor; and Fort Brent Station Hospital on Mindanao. Three of the station hospitals as well as Sternberg had a dental clinic, and Sternberg also had a laboratory (including a veterinary section) and a dispensary service. In 1940 these installations served approximately 30,000 American and Philippine personnel, about one-fourth of whom were dependents.[28]

[25]Cooper, "Medical Department Activities," pp. 20–22, file 314.7, HUMEDS, RG 112, NARA. On collecting and clearing companies, see Table 1.

[26]William J. Kennard, "Observations on Bataan," 22 Aug 42, pp. 2–3, attached to idem, "History—Medical Department," same date, file 000.71 (Interviews–SWPA), HUMEDS, RG 112, NARA.

[27]Cooper, "Medical Department Activities," pp. 92–95, file 314.7, HUMEDS, RG 112, NARA.

[28]CSurg, Phil Dept, Annual Rpt, 1940, p. 1, file 319.1–2, HUMEDS, RG 112, NARA.

After planners adopted RAINBOW 5 in November 1941, looking to the defense of Manila rather than the withdrawal of forces to Bataan, the Office of the Chief Surgeon began preparations to develop a hospital center and supply system around Sternberg General Hospital. Located in the capital, the hospital buildings were much as they had been under the Spaniards—structures of hollow tile and stucco, standing near the Pasig River—but the site had grown noisy and congested with the city's growth. Colonel Cooper expanded Sternberg from 450 to 800 beds and, paralleling methods used in Hawaii, selected a number of buildings for conversion into hospital annexes in the event of war. Since the War Department expected Manila to be the target of enemy air attacks, plans also called for the relocation of the now enlarged Medical Supply Depot in Manila to a place outside the city. Schemes were put on paper to construct subdepots at Tarlac, Los Banos, and Cebu, but the subdepots had not materialized when war broke out. Perhaps fortunately, the change in plans came too late to permit such a wide dispersion of supplies. Outside the capital, the old hospital building at Fort William McKinley, just south of Manila, was reconditioned and transformed into a 250-bed station hospital. Although the medical and surgical staffs were adequate, the hospital lacked up-to-date equipment. At Fort Stotsenburg, near Clark Field, the 350-bed station hospital was fairly well equipped, and a 750-bed addition was under construction when hostilities started.[29]

Both Bataan and Corregidor received some attention. In late 1941 Colonel Cooper guided the alteration and renovation of existing buildings at Corregidor's Fort Mills, and planned to use Malinta Tunnel, actually an underground complex, as hospital space in the event of war. No permanent hospital stood on Bataan, but during the autumn equipment for one general hospital of 1,000 beds was stored in a warehouse at Limay on the peninsula.[30]

A few weeks before Pearl Harbor, equipment for two general hospitals and five station hospitals arrived in the Philippines. Their fortuitous appearance resulted from timely requisitions made upon Surgeon General Magee by Colonel Schlanser in support of the Army's new and broader defense role. Other supplies remained tantalizingly out of reach. When hostilities began, equipment for ninety regimental dispensaries either was being prepared for shipment or was already en route to the Philippine Islands. The same was true of new medical chests and other gear for the units of the Philippine Division, which took the field with 1917-type medical chests. Medical units of the Philippine Army had practically complete but obsolete equipment, and almost no reserve stocks, leaving them entirely dependent on the Medical Supply Depot for replacement of all items. Similarly, they depended on civilian vehicles for evacuation, having only about a quarter of their authorized transportation.

[29]Cooper, "Medical Department Activities," p. 47, file 314.7, and Sternberg Gen Hosp Annual Rpt, 1940, pp. 1–2, file 319.1–2, HUMEDS, RG 112, NARA; Wiltse, *Medical Supply*, pp. 399–400. See also Manila Hosp Ctr GO 1, 12 Dec 41, The Historical Unit (THU) Note Cards, Historians files, HUMEDS, RG 112, NARA.

[30]Cooper, "Medical Department Activities," p. 47, file 314.7, HUMEDS, RG 112, NARA.

By 8 December 1941 (7 December in the United States and Hawaii), the strength of the medical contingent in the Philippines stood at 1,536, including 247 medical officers (some arrived with other USAFFE reinforcements), 717 enlisted men, and 572 Philippine Scouts. Medical personnel were about 5 percent of the total U.S. Army garrison, which itself was 2 percent below table-of-organization levels. Upon these few soldiers and their civilian colleagues would fall a formidable burden. Despite all efforts, in the Philippines as in Hawaii and at home, the buildup to meet the oncoming storm had scarcely begun.[31]

The Ordeal Begins

On the same day the Japanese attacked Pearl Harbor, their naval and air forces struck the American territories of Guam, Wake, and the Philippines. A few days after the initial assault, on 11 December, Guam surrendered to a Japanese invasion force. By the twenty-third Wake Island also had capitulated, cutting a line of communications between Hawaii and the Philippines and leaving the United States without a central Pacific base west of Midway. The Philippines' only hope for defense lay with USAFFE's ground and air forces and with the U.S. Asiatic Fleet.

But the enemy's early morning air attacks severely damaged U.S. defensive capabilities in the Philippines. Destruction was widespread. Strikes on 8 December destroyed nearly all the planes and killed many personnel at Clark Field north of Manila and at Iba Field to the west. On the following day the Japanese attacked Nichols Field near Manila before dawn, wrecking planes and ground installations. On the tenth they hit Del Carmen Field near Clark and the Nichols and Nielson Fields near Manila. On the same day enemy bombers flying at 20,000 feet, out of range of American antiaircraft guns, struck the Cavite Naval Base on the southern shore of Manila Bay, scoring direct hits on the power plant, dispensary, repair shop, warehouses, barracks, and radio station, and setting the entire yard ablaze. On the twelfth and thirteenth Japanese aircraft in force again assaulted targets throughout Luzon. When these raids ended, American air power in the Philippines had been virtually demolished. Admiral Thomas C. Hart, commander in chief of the Asiatic Fleet, had no recourse but to evacuate his warships, isolating the Philippines and leaving them open to attack.[32]

Meanwhile, the medics labored over the first waves of wounded. On 8 December 300–350 casualties from Clark Field were admitted to the nearby Fort Stotsenburg Station Hospital. Most suffered from shrapnel and a few from burns and bullet wounds incurred in the strafing. In a small room at the hospital, surgical teams worked at three operating tables, treating the more seriously injured. Most burn cases were handled in the first aid room. As in Hawaii, the use of sulfanilamide in great quantities resulted in very little infection and quick

[31]Ibid., pp. 5, 7, 22–23, file 314.7; Radiogram, AGO to CG, USAFFE, Manila, 20 Aug 41, sub: [Shipment of Medical Supplies], and 1st End, AGO to TSG, 1 Dec 41, sub: Priority for Complete Original Equipment for Army and Corps Medical Units, THU Note Cards, Historians files. All in HUMEDS, RG 112, NARA.

[32]Morton, *Fall of Philippines*, pp. 84–87; Samuel Eliot Morison, *History of United States Naval Operations in World War II*, 15 vols. (Boston: Little, Brown and Co., 1947–62), 3:168–74.

healing of even the deepest wounds. Stotsenburg was a small hospital, however, and the casualties were too numerous for its staff. As a result, patients were evacuated by train to Sternberg General Hospital in Manila. Soon casualties from Iba Field, who were almost as numerous, were entering Sternberg as well.[33]

When war broke out, Nichols Field, about 5 miles south of Manila, was in the midst of a construction program that included new barracks, quarters, hangars, and runways. On 8 December Lt. Col. Charles H. Moorhouse, MC, flight surgeon at the field, prepared for the emergency by establishing four aid stations at key points. Late in the afternoon the first air raid casualties with minor wounds arrived. Before dawn, casualties mounted as seven Japanese bombers attacked Nichols Field itself, destroying one hangar, killing 3 men, and wounding 15, one of whom died later. In the operating room at adjacent Fort McKinley's station hospital, other Nichols casualties awaited surgery. They lay in unnerving silence, as a result of either morphine, shock, or simple relief at finding themselves alive, while medics rinsed their wounds and "steady-handed anesthetists drove long, glistening needles" into their naked backs.[34]

On 9 December Colonel Moorhouse moved into the new barracks area and set up a field dispensary. That afternoon, the enemy raided the field again, killing 18 and wounding 30, many seriously. The temporary dispensary and much equipment was strafed and one ambulance almost destroyed. The surgeon then moved onto a road between Nichols and McKinley, working in the open until the field was evacuated. For about two weeks, enemy aircraft bombarded Nichols Field almost daily, killing 50 and wounding 150.[35]

Almost immediately after the attack, Colonel Cooper put the Manila Hospital Center into operation. Composed of Sternberg General Hospital plus eight annexes in colleges, universities, dormitories, barracks, and the Jai Alai Building, the center formed the focal point of medical activity. Total planned bed capacity exceeded 4,600. But in the opening days Sternberg admitted most of the attack victims, beginning in the early morning hours of 9 December. As raids increased in severity during the following days, wounded poured in from Iba Field, Clark Field, Fort Stotsenburg, Nichols Field, Cavite Naval Base, Manila, and later from the Luzon fronts. The surgical teams that Cooper had organized on the first day of hostilities were kept busy. During some peak periods all surgeons, nurses, and corpsmen worked for two days without rest, and even at other

[33]Ltr, 1st Lt Willa L. Hook, CNurse, Base Sec 3, to Col Percy J. Carroll, CSurg, USASOS, SWPA, 5 Feb 43, sub: History of Medical Department Activities in the Philippines Campaign, p. 1, file 000.71 (Interviews–Philippines); Catherine L. Nau, "History of the War, Philippines, 1941–1945," p. 40, file 314.7. Both in HUMEDS, RG 112, NARA. Nau, an American Red Cross volunteer, was assigned to Sternberg's Social Service Department as a field director.

[34]Quotation in Alfred A. Weinstein, *Barbed-Wire Surgeon* (New York: Macmillan Co., 1948), p. 2. Weinstein was later assistant chief of surgical service in General Hospital No. 1 on Bataan; his memoir, though it resembles a "docudrama" in some respects, is filled with useful observation and commentary on his combat and prison experiences. See also Ltr, Lt Col Charles H. Moorhouse to SG, U.S. Army, 20 Jan 43, sub: Medical Service in the Philippines, December 8, 1941 to March 10, 1942, pp. 1–3, file 000.71, HUMEDS, RG 112, NARA.

[35]Ltr, Moorhouse to SG, U.S. Army, 20 Jan 43, pp. 1–3, file 000.71; Nau, "History of War," p. 4, file 314.7. Both in HUMEDS, RG 112, NARA.

times many slept at the hospital in order to be available when needed. The casualties suffered from injuries that included severe complicated fractures, burns, and brain wounds. Tressa Cates, a civilian nurse, was stunned by the carnage:

> . . . soon our wards, receiving rooms, operating rooms, as well as the large hospital yard, were filled with the wounded and the dying.
>
> American and Filipino men, both civilian and military, were lying everywhere on the well-kept lawn. Many of them were charred and burned beyond recognition. Blood as crimson as the hibiscus flowers which bloomed in profusion in the yard was scattered everywhere.[36]

Since the Philippine Army headquarters was located across the street, Sternberg General Hospital observed blackout regulations every night. Staff members dug slit trenches on the grounds for the protection of their patients and themselves. Adding to their burden was an ever-increasing number of victims of traffic accidents, resulting from the blackout in Manila and elsewhere.[37]

The city was a scene of mass confusion. On 10 December Japanese forces landed on Luzon, and two weeks later the main enemy force came ashore, winning quick successes against the defenders. By the end of the month the invaders were closing in on the doomed capital. With no protection against the bombings, casualties mounted. Traffic was congested and the population demoralized. Some people indulged in wild orgies of drinking; others became hysterical. Hospital activities were disorganized and in a state of turmoil. Medical personnel treated casualties amid wailing sirens, bursting flares, and rifle fire from nervous troops who shot at any unusual light or sound. False reports spread of parachute invasions, gas attacks, and spy infiltrations.[38]

On 13 December Fort William McKinley Station Hospital closed down as a result of constant bombardment from enemy aircraft, and much of its staff was integrated with Sternberg's. Similarly, personnel from Fort Stotsenburg Station Hospital transferred to Sternberg on the twenty-fourth. Using these reserves, the Manila Hospital Center treated about 2,000 military and civilian patients during the first three weeks of the war, including 154 casualties transferred from the U.S. Naval Hospital, Canacao, at Cavite, 7 miles down the coast from Manila.[39]

As Manila's fall became imminent, MacArthur, who on 18 December was promoted to the AUS rank of general, declared the capital an open city and ordered the withdrawal of American and Philippine troops to Bataan. With his medical plans now gutted (there was no need for a medical center in the capital when a campaign would have to be waged on Bataan), Colonel Cooper began to evacuate medical facilities and

[36]Quotation from Tressa R. Cates, *The Drainpipe Diary* (New York: Vantage Books, 1957), p. 19. See also Cooper, "Medical Department Activities," pp. 48–49, file 314.7, HUMEDS, RG 112, NARA.

[37]Cooper, "Medical Department Activities," pp. 48–49, 84, file 314.7, HUMEDS, RG112, NARA.

[38]W. H. Waterous, "Reminiscences of Dr. W. H. Waterous Pertinent to World War II in the Philippines," p. 17; James O. Gillespie, "Recollections of the Pacific War and Japanese Prisoner of War Camps, 1941–1945," p. 8. Both in file 314.7–2, HUMEDS, RG 112, NARA.

[39]Cooper, "Medical Department Activities," pp. 48–50, file 314.7, HUMEDS, RG 112, NARA. Records on all casualties during the first weeks of the war in the Philippines were brief as a result of the tremendous volume of work and shortage of personnel. Also, most medical records were lost when the boat on which they were being shipped was bombed.

personnel, including patients capable of traveling, to the peninsula. On the afternoon of the twenty-third the staff and patients of the Manila Hospital Center joined the caravan of military vans, civilian vehicles, and fleeing refugees crowding the one road leading through the city of San Fernando and south into Bataan. Lt. Col. James W. Duckworth, MC, formerly the executive officer at Sternberg, established General Hospital No. 1 at Limay, following General MacArthur's verbal orders. Working under intermittent air attack, Maj. Peter Kempf, MC, the medical supply officer at Sternberg, moved supplies and equipment from the various annexes in Manila and from Fort McKinley Station Hospital to Corregidor by barge and to the Bataan Peninsula by truck. Despite all efforts, critical supplies were lost to air attack or abandoned in the withdrawal.[40]

After leaving Manila on Christmas Eve, Colonel Cooper set up the main section of his office on Corregidor with the rest of the USAFFE staff. He established a subdivision of his office ashore at General Hospital No. 1. On Christmas Day most of the medical personnel remaining in Manila went by boat to Bataan to help Maj. William D. North, MC, organize General Hospital No. 2 at a previously selected site along the Real River near Cabcaben. Here Army engineers worked to clear away bamboo thickets and jungle, while supply personnel opened a medical depot on the Mariveles road. Vessels carrying evacuees docked at the towns of Lamao and Cabcaben, usually in the early morning, and on several occasions during air raids. On 29 December the remaining Army nurses left Manila, and by New Year's Eve the last patients as well had departed on boats and barges.[41]

As the Corregidor hospitals became overcrowded, General MacArthur on 28 December decided to evacuate the worst cases. At his order, Col. Percy J. Carroll, MC, commanding officer of Sternberg General Hospital, selected 224 patients to accompany him to Australia on the *Mactan*, an interisland steamer chartered by the Red Cross in the Philippines to serve as a hospital ship. The doctor also took two Army nurses, Lt. Floramund A. Fellmeth and Lt. Florence MacDonald, and a number of Filipino doctors and nurses serving with the U.S. Army. Protected by Red Cross markings, the ship docked at Sydney, Australia, after a harrowing journey, and the patients found refuge in an Australian Army hospital. Yet some who were hopelessly crippled had been left behind, a burden to themselves and to the medical staff during the battles that followed and in prison thereafter.[42]

[40]James O. Gillespie, "Malaria and the Defense of Bataan," in Ebbe Curtis Hoff, ed., *Communicable Diseases: Malaria*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963), pp. 500–501. See also idem, "Recollections," p. 8, file 314.7–2; Cooper, "Medical Department Activities," pp. 78–79, file 314.7, and James W. Duckworth, "The Official History of General Hospital Number One, United States Army Forces in the Far East, at Camp Limay, Bataan, Little Baguio, Bataan, and Camp O'Donnell, Tarlac, Philippine Islands, From December 23, 1941 to June 30, 1943," p. 1, file 319.1–2 (General Hospital 1) Philippine Islands. All in HUMEDS, RG 112, NARA.

[41]Duckworth, "History of General Hospital Number One,", p. 1, file 319.1–2 (General Hospital 1) Philippine Islands; Cooper, "Medical Department Activities," pp. 2, 8, 53, file 314.7; Kennard, "Observations on Bataan," 22 Aug 42, pp. 1–2, attached to idem, "History—Medical Department," same date, file 000.71 (Interviews–SWPA). All in HUMEDS, RG 112, NARA.

[42]Cooper, "Medical Department Activities," p. 53, file 314.7; Kennard, "Observations on Bataan," 22 Aug 42, p. 1, attached to idem, "History—Medical Department,"

Continued

The Jungle Environment

Bataan was ideally suited for a defensive campaign. Jungle-clothed and mountainous, the peninsula juts from the mainland of Luzon in a southerly direction between Subic Bay and Manila Bay. Corregidor and several smaller fortified islands protected the entrance to Manila Bay. Approximately 25 miles wide at its broadest part, Bataan is cut by many streams and steep ravines. In 1941 the peninsula had two roads, one of which was barely adequate for motor transport in dry weather. Elsewhere the tropical jungle was almost impossible to penetrate, except by a network of narrow trails.

By masterful delaying actions, MacArthur's forces prevented the Japanese from cutting off any significant number of defenders. By 7 January 1942 American and Philippine troops had completed their withdrawal. The Japanese followed, and soon controlled both the base of the peninsula and its water approaches. Henceforward, the defenders had to be self-sufficient. This fact had enormous repercussions for medical personnel, who were responsible for the care and treatment of approximately 80,000 soldiers and 26,000 civilians. Supplies of food and medicine were totally inadequate for so many. Both soldiers and refugees had abandoned extra clothing and equipment during the retreat, and now faced the chilly nights and steamy days without protection from heat, cold, or mosquitoes.[43]

The topography that favored the defense meant also that the evacuation of wounded would be slow and arduous, and at times virtually impossible. Despite its lushness, the jungle yielded little food to the defenders, while its diseases, especially malaria, took a fearful toll.[44]

At 1500 on 9 January the battle for Bataan opened as elements of the Japanese *14th Army*, commanded by Lt. Gen. Masaharu Homma, began their attack with a concentrated barrage. Strong resistance by American and Philippine forces surprised the enemy, whose advance was also hindered by difficult terrain and inadequate maps. But after a week of fighting, the American line began to give way to heavy Japanese pressure. Litter-bearers carrying the wounded led the retreat along the narrow beaches of the South China Sea. Guns, trucks, and equipment that could not be moved were destroyed. By the evening of the twenty-fifth the line had been evacuated. Daily counterattacks failed to halt the enemy's advance. On the morning of the twenty-sixth the last troops of the Philippine Division to be withdrawn took positions along a new line paralleling the Pilar-Bagac road. Losses on both sides had been heavy. General Hospital No. 1 at Limay treated more than 1,200 battle casualties, all requiring major surgery.[45]

same date, file 000.71 (Interviews–SWPA); Waterous, "Reminiscences," p. 18, file 314.7–2. All in HUMEDS, RG 112, NARA. See also Interv, Mary Ellen Condon-Rall with Percy J. Carroll, 26 Sep 80, CMH; Philip A. Kalisch and Beatrice J. Kalisch, "Nurses Under Fire: The World War II Experiences of Nurses on Bataan and Corregidor," *Nursing Research* 25, no. 6 (Nov–Dec 76): 411. The Japanese government was notified of the ship's mission through Swiss channels. See Msg, Forster, Philippine Red Cross, to Chairman, American Red Cross, 28 Dec 41, and other *Mactan* materials, THU Note Cards, Historians files, HUMEDS, RG 112, NARA.

[43]Morton, *Fall of Philippines*, p. 405.

[44]Ibid.; Gillespie, "Recollections," p. 13, file 314.7–2, HUMEDS, RG 112, NARA.

[45]Morton, *Fall of Philippines*, pp. 265–95; Duckworth, "History of General Hospital Number One," p. 2, file 319.1–2 (General Hospital 1) Philippine Islands, HUMEDS, RG 112, NARA.

Frontline medical support varied widely. The recently organized Philippine Army medics were poorly equipped, short of blankets, litters, and surgical equipment. Lacking both materiel and training, they were slow in moving the wounded to hospitals. By contrast, Lt. Col. Harold W. Glattley's 12th Medical Regiment (PS) functioned admirably, rarely losing equipment, improvising when necessary, and moving its patients to the general hospitals well within the eight- to ten-hour period that doctors considered essential. "It is doubtful," declared Colonel Cooper, "if any unit of similar size [421 men in all] had ever contributed so much to the medical service of a major campaign."[46]

The objectives of medics with seriously wounded patients were the general hospitals at Limay and Cabcaben. At Limay—the village itself was "a collection of tiny bamboo shacks mounted on high stilts"—they found a complex of thirty-eight single-story tin- or nipa-roofed buildings in a spacious quadrangle dotted with lofty mango trees. In addition to the wards and an operating pavilion, Limay provided buildings for the hospital headquarters, officers quarters, a ward for minor surgery, a dental clinic, a laboratory, and a pharmacy. A huge sheet-iron warehouse fronting the beach bulged with salvaged medical supplies.[47]

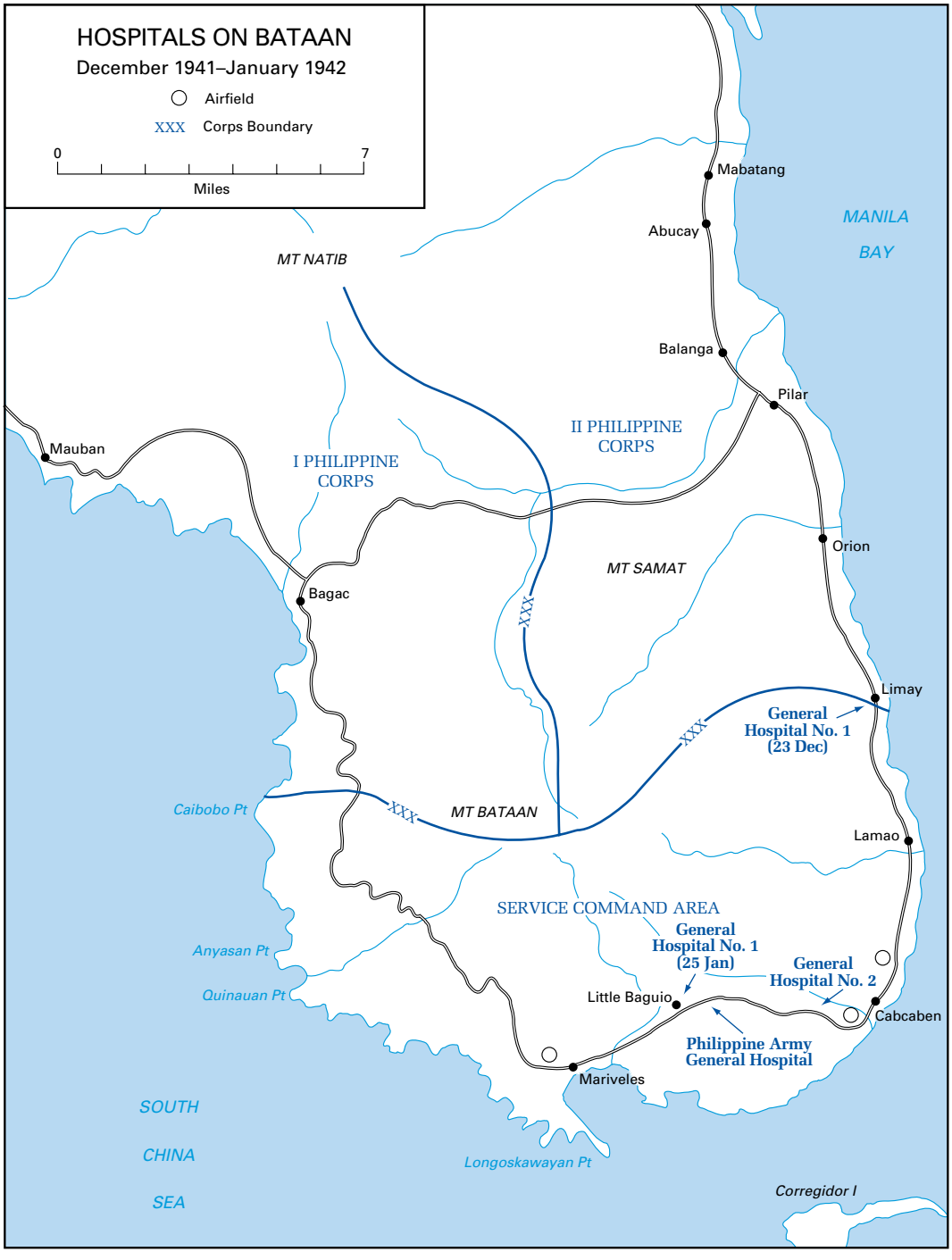
Standing close to the front line, the Limay facility was in actual practice more a surgical than a general hospital. Blankets blacked out doors and windows. In the operating pavilion the seven tables were occupied at all times, while more patients lay on litters awaiting their turns. During intense fighting, casualties averaged 80 to 200 daily. Surgery reached its peak on 16 January, the day after the Japanese penetrated the line, when surgeons performed 187 major operations in twenty-four hours. During the last week of the month, when the enemy was overrunning the defense line and the American and Philippine forces were withdrawing to the Pilar-Bagac road, General Hospital No. 1 moved from its quarters to open sheds at Little Baguio, a onetime Army engineer camp on the southeast corner of Bataan, about 5 miles from General Hospital No. 2 near Cabcaben (*Map 2*).[48]

The result of improvisation, the Cabcaben hospital was primitive by comparison with Limay and even with Little Baguio. Army engineers had built the facility from scratch in a dense jungle on the edge of a stream leading to Manila Bay, clearing away lush vegetation and bamboo and cutting a drive from the coast road. By 5 January the basic facilities for a tented hospital existed at Cabcaben, and the first operation was

[46]Cooper, "Medical Department Activities," pp. 20 (quotation), 22–23, file 314.7, HUMEDS, RG 112, NARA. Glattley was promoted to lieutenant colonel on 19 December 1941.

[47]Quotation from Weinstein, *Barbed-Wire Surgeon*, p. 10. See also Cooper, "Medical Department Activities," p. 54, file 314.7; Kennard, "Observations on Bataan," 22 Aug 42, p. 4, attached to idem, "History—Medical Department," same date, file 000.71 (Interviews–SWPA); Duckworth, "History of General Hospital Number One," p. 2, file 319.1–2 (General Hospital 1) Philippine Islands. All in HUMEDS, RG 112, NARA.

[48]Cooper, "Medical Department Activities," p. 54, file 314.7; Kennard, "Observations on Bataan," 22 Aug 42, p. 4, attached to idem, "History—Medical Department," same date, file 000.71 (Interviews–SWPA); Duckworth, "History of General Hospital Number One," p. 2, file 319.1–2 (General Hospital 1) Philippine Islands. All in HUMEDS, RG 112, NARA. Hospital No. 1 was bombed on 30 March and again on 7 April; the Japanese high command apologized for the first attack. See Msg, Wainwright to CG, USAFFE, Melbourne, 31 Mar 42, THU Note Cards, Historians files, HUMEDS, RG 112, NARA. The nickname Little Baguio was ironic, referring to a resort in the cool hills of northern Luzon.


HOSPITALS ON BATAAN
December 1941–January 1942
Airfield
XXX Corps Boundary
0
7
Miles
Mabatang
MANILA
BAY
Abucay
MT NATIB
Balanga
Pilar
II PHILIPPINE
CORPS
Mauban
I PHILIPPINE
CORPS
Orion
MT SAMAT
Bagac
XXX
Limay
General
Hospital No. 1
(23 Dec)
XXX
Caibobo Pt
XXX
MT BATAAN
Lamao
SERVICE COMMAND AREA
General
Hospital No. 1
(25 Jan)
Anyasan Pt
General
Hospital No. 2
Quinauan Pt
Little Baguio
Cabcaben
Philippine Army
General Hospital
Mariveles
SOUTH
CHINA
SEA
Longoskawayan Pt
Corregidor I

MAP 2

successfully performed that day. The site possessed good water, offered concealment by tall trees, and lay close to the Medical Supply Depot. But its disadvantages were equally marked. The hospital was scourged by malaria and, as the campaign neared its end, ran short of beds, blankets, bandages, mosquito nets, and other necessities.[49]

During the second week of January General Hospital No. 2 began to expand and improve. At maximum development the facility sprawled for about 1,500 yards along the south bank of the Real River, and its personnel numbered some 67 officers, 83 nurses, 250 enlisted men, and 200 civilians. Hospital boundaries were marked by three red crosses, each 40 x 60 feet, placed at the points of an equilateral triangle 1 mile from apex to base. The crosses were plainly visible from the air, and the enemy, despite a reputation for ruthlessness, respected them, for no bombs fell within the points. But since the hospital stood a mile or so from the village and airfield at Cabcaben and 4 miles from the Bataan Airfield, all enemy objectives, the staff witnessed numerous bombings. Such sights became more common as the front contracted.[50]

During the course of the struggle the role of General Hospital Nos. 1 and 2 changed. Early in the campaign, evacuation had conformed to standard practice, with collecting companies operating ambulance service forward to the various battalion aid stations and backward to division clearing stations. Soldiers with minor wounds received first- and second-echelon treatment at such stations before returning to the front. As the enemy advanced, however, ambulance drivers moved patients directly to the two hospitals. The latter served increasingly as field or surgical hospitals as well, and provided a melange of second-, third-, and fourth-echelon care.

The Philippine Army surgeon set up a general hospital on the Cabcaben–Mariveles road, not far from army headquarters, to treat Philippine casualties in the rear areas. Since materials were limited, tents with wooden floors became wards, a small surgical pavilion, and a first aid dressing room. Bamboo platforms supplemented the limited number of iron beds and cots. Staffed by Philippine Army doctors, dentists, and corpsmen, the hospital handled both medical cases and minor wounds, the patient census seldom rising above 100 until late in the campaign.[51]

The End Approaches

From 23 January to 17 February the American positions on Bataan were under strong attack along the west coast (the Battle of the Points) and at two places along the reserve battle line (the Pocket Fights). During those battles the three battalions of the 45th Infantry (PS) were fighting on two widely separated fronts. Two battalions entered combat at Anyasan Point and the adjoining sector Quinauan Point, and the third battalion fought along the Tuol River near the reserve battle line. The

[49]Cooper, "Medical Department Activities," p. 54, file 314.7, HUMEDS, RG 112, NARA.

[50]Ibid., pp. 68–70, file 314.7; Ltr, Gen Hosp No. 2 to Surg, Phil Dept, thru CG, Phil Dept, 3 Feb 42, sub: Sanitary Report for Month of January 1942, THU Note Cards, Historians files. Both in HUMEDS, RG 112, NARA.

[51]Cooper, "Medical Department Activities," pp. 76–77, file 314.7, HUMEDS, RG 112, NARA.

collecting company's ambulance sections had to cover substantial distances over narrow twisting trails carved out of the jungle by Army engineers. One ambulance section worked out of a collecting station located on the main west road, about 3 miles north of Quinauan and Anyasan Points, evacuating casualties from those two sectors. Only the seriously wounded could be brought back to the general hospitals. The other ambulance section operated forward from the collecting station, a distance of some 12–15 miles, moving towards the regimental and battalion aid stations around the Tuol River. This ambulance section carried a full load of patients back to the collecting station and returned to the front for more casualties. By the middle of February, when the fighting ceased, the collecting stations resembled large field hospitals, with many patients suffering from minor wounds, malaria, and dysentery.

However, the danger on the west coast was over, at least for a time. Worn out, having sustained heavy losses both in battle and from malaria, the enemy withdrew and awaited reinforcements. Both sides remained dug in along the Orion–Mount Samat–Bagac position, in an apparent stalemate. The reality of the situation was quite different, for the attackers could replenish supplies and replace exhausted fighters, while the defenders could not. During the lull the Japanese grew stronger, but hunger and disease took their toll among the American and Philippine troops.[52]

Meanwhile, major changes came to the Allied force. On 12 March General MacArthur left Corregidor for Australia, assuring General Wainwright of his determination to "come back as soon as I can with as much as I can." Prior to his departure, because he planned to control operations in the Philippines from his office in Australia, MacArthur abolished USAFFE's advance command and created a new entity, the Luzon Force, comprising the troops on Bataan and those still holding out in the mountains of Luzon, with General Wainwright as commander. Then, late on the night of the twentieth, the War Department appointed Wainwright commander of the United States Forces in the Philippines (USFIP), and he left Bataan for Corregidor. Command of the Luzon Force passed to Maj. Gen. Edward P. King, Jr.[53]

The medics, too, reorganized. On Corregidor Colonel Cooper became Chief Surgeon, USFIP, and appointed Colonel Glattley on Bataan to be the Luzon Force surgeon. Cooper also made some changes in the hospital commands. Lt. Col. James O. Gillespie, MC, replaced Lt. Col. William D. North as commander of General Hospital No. 2. Col. Carlton L. Vanderboget, MC, briefly took command of General

[52]Morton, *Fall of Philippines*, pp., 290, 305, 316, 324, 350–52, 356; Cooper, "Medical Department Activities," pp. 41–43, file 314.7, HUMEDS, RG 112, NARA. Both bacillary and amebic dysentery were noted on Bataan; however, some doctors believed that most cases resulted from multiple vitamin deficiencies, which affect the mucous lining of the bowels. See, e.g., Ltr, Surg, thru CO, Provisional Regt (Air Corps), to CG, Phil Dept, 1 Apr 42, sub: Monthly Sanitary Report, THU Note Cards, Historians files, HUMEDS, RG 112, NARA.

[53]As quoted in Morton, *Fall of Philippines*, p. 361 (see also pp. 363–64). "With the establishment of Headquarters, United States Forces in the Philippines [on Corregidor on 21 March 1942], and General Headquarters, Southwest Pacific Area (GHQ SWPA) [in Australia on 18 April 1942], USAFFE ceased to be an active command." See *Order of Battle of the United States Ground Forces in World War II: Pacific Theater of Operations* (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1959), p. 34.



PHILIPPINE SCOUT BEING TREATED AT GENERAL HOSPITAL NO. 1

Hospital No. 1 when Colonel Duckworth left that facility to establish a convalescent hospital at Iloilo on Panay. But when the Japanese sank the interisland steamer on which Duckworth was to travel, the chief surgeon shelved the plan for the convalescent hospital and Duckworth resumed his command of Hospital No. 1. Colonel Vanderboget then became medical inspector at the service command headquarters.[54]

At the hospitals, patient care was marked increasingly by expedients as supplies fell. Little Baguio, though much smaller than the Limay complex, did possess water and electricity in its eleven buildings, former engineer garages, and machine shops. High above sea level and shaded by towering hardwoods, the hospital was free of malaria. The wards were housed in two large open sheds with no floors and tin roofs; one sheltered prisoners of war. Most patients were brought in at night to protect them from bombing and shelling by enemy error because of the hospital's proximity to the ordnance and quartermaster supply points. Lt. Juanita Redmond described how "the

[54]Gillespie, "Recollections," p. 20, file 314.7–2, HUMEDS, RG 112, NARA.

litter bearers would come in a procession from surgery, and I would turn my flashlight to guide them to the unoccupied beds." The patient's record was made from a field tag attached to his clothing at the first aid station. Then the corpsmen undressed him, and the nurse "made him as comfortable as [she] could."[55]

At first Little Baguio functioned primarily as a surgical hospital, transferring patients to Cabcaben as necessary. However, as the number of casualties increased, the hospital grew. Filipino workmen from the surrounding countryside built bamboo shelters and double- and even triple-decked beds of the same material. Eventually, even these additions were not enough, and hospital personnel were forced to spread out onto the strip of ground between the two tin-roofed sheds, where they cleared a patch of ground for new accommodations.[56]

Meanwhile, Hospital No. 2 started to receive a larger number of surgical cases as the pace of fighting picked up. Additional surgical tents were set up as rapidly as possible. Colonel North developed and directed a 200-bed receiving ward, lighted for night work and equipped to perform minor surgery. Most casualties resulted from shell fragments or machine gun fire, and sulfa drugs were available to help prevent infection. Inadequate debridement, packing wounds too tightly, and omission of delayed primary closure, however, encouraged gas gangrene, which resulted in many amputations and the needless loss of lives. A morgue was set up near the receiving ward, and a graves registration unit attended to all burial details, as well as maintained records.[57]

To accommodate the increasing numbers of casualties, Army engineers built many additional facilities in March 1942, including more operating theaters and receiving wards, some under canvas. As surrender neared during April, however, the hospital census soared from 3,256 to 7,000. Medics set up wards in the jungle without any cover, except shelter halves attached to individual cots or beds, or sheets tied to the limbs of trees. A nurse serving on Bataan observed: "When we found a nice shady spot we made that into a ward or a place for an operating room."[58]

The most alarming factor in the situation of the 80,000 troops on Bataan continued to be the inadequate food supply. Control of the air and sea by the Japanese allowed them to blockade the defenders with increasing effectiveness. Enemy patrols made smuggling across Manila Bay difficult. An enemy cruiser, a minelayer, and eight destroyers isolated the whole region from the supplies available in the southern islands of the Philippines. Attempts by General MacArthur to introduce supplies from Australia met with little success. As early as 5 January the soldier's daily ration had been cut in half. From that time

[55]Juanita Redmond, *I Served on Bataan* (Philadelphia: J. B. Lippincott Co., 1943), pp. 46–47.

[56]Ibid.

[57]Ibid., p. 56; Cooper, "Medical Department Activities," p. 66, file 314.7, and Kennard, "Observations on Bataan," 22 Aug 42, pp. 3–4, attached to idem, "History—Medical Department," same date, file 000.71 (Interviews–SWPA), HUMEDS, RG 112, NARA.

[58]Quotation from Interv, 2d Lts Juanita Redmond and Eunice C. Hatchitt, ANC, 6 Jul 42, sub: Their Experiences During the Siege of Bataan and Corregidor, p. 2, file 000.71. See also James O. Gillespie, "History of General Hospital Number 2," p. 12, file 314.7–2. Both in HUMEDS, RG 112, NARA.



GAS GANGRENE WARD AT GENERAL HOSPITAL NO. 2

through February the daily issue averaged less than 30 ounces, as compared to the peacetime garrison ration of 71 ounces for the American Army and 64 for the Philippine Army. Colonel Cooper estimated that the soldiers received about 2,000 calories a day in January, about 1,500 in February, and only about 1,000 in March. Yet they needed about 4,000 to fight in the harsh landscape of mountains and jungles.[59]

By April the ration had been reduced to 17 ounces a day, of which only 1.2 ounces was meat, most often canned corned beef. Rice took the place of wheat; about half was white, its husk removed by milling, and in consequence it lacked the thiamine that would have prevented beriberi. Even brown rice had lost much nutritive value, for it was mildewed and moist. Scurvy and pellagra, caused respectively by deficiencies of vitamin C and niacin, also appeared. The soldiers used up their fat reserves and then began to lose muscle, ultimately suffering from weakness and from night blindness, due to a lack of vitamin A. The want of protein was particularly debilitating for the younger soldiers, their deteriorating condition further aggravated by diarrhea and dysentery; the latter ailments were especially widespread among the Philippine troops, who were inade-

[59]Morton, *Fall of Philippines*, pp. 367–68.

quately trained in basic military hygiene. By March, weight loss of twenty to thirty pounds per man was common.[60]

The soldiers' meals, which hardly deserved the name, were served twice a day, breakfast at 0800 and dinner between 1630 and 1700. The airmen had their rations drawn from the same quartermaster depot. No one, not even the quartermaster officers themselves, ate any better than anyone else. A soldier described his dinner the day after he went on one-third rations as "one slice of bread, one slice [of] corn beef, cup of tea, rice and that my friend is what we now call a good chow." On 28 March General Wainwright cabled Washington: "Our most pressing need is subsistence as only a suff[icient] quantity remains on hand in Bataan to feed the troops there until Apr[il] 15 at about 1/3 ration. . . ." He added, "We are now slaughtering all available carabao [water buffalo] and surplus horses, and will be forced to slaughter pack mules within the next week or ten days. When this supply of meat is exhausted, the chief component of the ration will no longer be available."[61]

The diet of the patients in the hospitals was more ample than that of the troops in the field, for General MacArthur ordered that they receive full rations, and on occasion they enjoyed one and a half rations. But quality was poor, and by the end of the campaign the sick and wounded subsisted basically on rice and carabao meat. During the early part of the siege flour, coffee, tea, oatmeal, canned goods, and vegetables were available in limited amounts. Milk and pineapple juice were given to the seriously ill, especially after a quantity was received in February. By April, however, the qualitative inadequacy of the ration had begun to result in impaired healing. As meat became more and more difficult to obtain, rice formed the sole or chief component of the patient's diet, as it did the soldier's. Noted a doctor: "It was quite a sight to see . . . those who should have received adequate soft and liquid diet trying to eat a gob of sticky, gummy, half-cooked rice."[62]

The Veterinary Corps tried to alleviate the food shortage by killing native pigs and carabao. The killing of animals for food went on from early January until the time of the surrender. In all, over 2,800 carabao and approximately 600 other animals were slaughtered and distributed to the Army. Foraging was another way the soldiers tried to supplement their food. Frontline units on their own initiative secured and slaughtered animals, helping to sustain themselves for a few additional weeks.

[60]Ibid. See also Ltr, Moorhouse to SG, U.S. Army, 20 Jan 43, p.5, file 000.71, and Kennard, "Observations on Bataan," 22 Aug 42, p. 6, attached to idem, "History—Medical Department," same date, file 000.71 (Interviews–SWPA), HUMEDS, RG 112, NARA.

[61]First quotation from James H. and William H. Belote, *Corregidor: The Saga of a Fortress* (New York: Harper and Row, 1967), p. 102; remaining quotations from Msg, Wainwright to AG, WD, Washington, for Gen Marshall, 28 Mar 42, THU Note Cards, Historians file, HUMEDS, RG 112, NARA. See also Msg, MacArthur to CG, Svc Cmd Sector, 5 Jan 42, [sub: Reduction of Subsistence to Half Rations], THU Note Cards, Historians files, and Cooper, "Medical Department Activities," pp. 35, 44–45, file 314.7, HUMEDS, RG 112, NARA; Redmond, *I Served on Bataan*, p. 37. On blockade, see Memo, G–4, USAFFE, to CofS, USAFFE, thru G–2 and G–3, 21 Mar 42, sub: CG, USAFFE, Radiogram, THU Note Cards, HUMEDS, RG 112, NARA.

[62]As quoted in Morton, *Fall of Philippines*, p. 368. See also Ltr, CG, USAFFE, to CG, Harbor Defense of Manila and Subic Bays, and CG, Phil Dept, 10 Feb 42, sub: Issue of Rations, THU Note Cards, Historians files, HUMEDS, RG 112, NARA. The hospital staff ate the same ration as troops in the field.

Eventually, all available animals were slaughtered for human consumption. Particularly painful to General Wainwright, a cavalry officer, was the necessity for the men of the 26th Cavalry (PS) to shoot and eat the bony horses that once had "served so gallantly." To add to the difficulties of obtaining provisions, the limited amount of food available on the peninsula was slow in getting to the troops because the supply vehicles often broke down on the mountain trails. Indicative of the growing shortage was the fact that casualties frequently arrived at the hospitals, not complaining of their wounds but rather requesting food.[63]

The second most needed item was quinine. Before 1941 civilian health authorities had failed in their efforts to carry out an effective malaria control program on Bataan, where some 400 square miles of marsh, rice paddy, thick jungle, and many streams defeated their efforts to kill mosquitoes. When the war began, the military authorities were equally unable to impose control measures of any significance. Instead, they relied almost entirely on quinine prophylaxis, which suppressed the symptoms of malaria without curing it. Many soldiers occupied native villages, or barrios; sanitary conditions were poor, and the heavy population of refugee civilians formed a reservoir of infection, from which malaria spread rapidly to the troops. The mosquito chiefly responsible for spreading the disease bred in the streams of the foothills, where much of the fighting occurred.

Inevitably, when the supply of quinine became depleted, malaria quickly attained a devastating incidence. There was never enough of the drug to protect so large an army for a three-month siege. At the outbreak of war approximately 4.5 million five-grain (.325-gram) tablets of quinine sulfate were available in the Medical Supply Depot. This whole quantity would have been sufficient only for thirty days' prophylaxis, on the basis of ten grains (.650 grams) of quinine per man per day. As early as 26 January the dosage had to be reduced to five grains a day. Ultimately, the supply was so limited that prophylaxis was discontinued, and the small quantity of quinine that remained was reserved for hospital treatment only—no more than eight grains to any individual case, however severe. Only the timely arrival of 1 million tablets from a medical depot on Cebu ensured that no hospital patients were denied treatment before the surrender. As a result, the death rate from malaria was low.[64]

Debilitation of the troops on the line was another matter, for the spread of the disease among the fighting forces could not be curtailed. Insect repellents

[63]Quotation from Jonathan M. Wainwright, *General Wainwright's Story*: *The Account of Four Years of Humiliating Defeat, Surrender, and Captivity* (Garden City, N.Y.: Doubleday, 1946), p. 53. See also Cooper, "Medical Department Activities," p. 99, file 314.7, HUMEDS, RG 112, NARA; Morton, *Fall of Philippines,* p. 369; Redmond, *I Served on Bataan*, p. 47.

[64]Paul F. Russell, *Malaria: An Account of Its Cause, Cure and Prevention* (Manila: Bureau of Printing, 1931), p. 37; Gillespie, "Malaria," in Hoff, ed., *Communicable Diseases: Malaria*, p. 503; Kennard, "Observations on Bataan," 22 Aug 42, p. 14, attached to idem, "History—Medical Department," same date, file 000.71 (Interviews–SWPA), and Interv, Redmond and Hatchitt, 6 Jul 42, p. 4, file 000.71, HUMEDS, RG 112, NARA. The chief carrier (vector) of malaria was *Anopheles minimis flaviostris.* Small amounts of the new synthetic antimalarial Atabrine were received on Bataan, but too little to make a difference. On the quinine shipment, see Msg, Wainwright to AG, WD, Washington, for Gen Marshall, 28 Mar 42, THU Note Cards, Historians files, RG 112, HUMEDS, NARA.

proved useless; the Philippine Army soldier was not provided with a mosquito bar and net, and many of the American soldiers had discarded theirs as an inconvenience when they retreated to Bataan. By March some units in the front line had malaria rates as high as 80 percent; on one day, the eighth, General Hospital No. 2 had 350 cases under treatment and on the next received 260 new ones. Medical officers explored the possibility of manufacturing quinine from cinchona bark. In early March Lt. Col. Arthur F. Fischer—a military intelligence officer and onetime director of forestry for the Philippine government who had introduced cinchona into the islands—was dispatched from Bataan to Mindanao to supervise the harvesting of the bark. The venture never promised to do more than alleviate the problem and, as matters turned out, Fischer was still on the southern island at the time of the final surrender.[65]

By the beginning of March the enormous increase in the number of patients with malaria, dysentery, and wounds, all complicated by malnutrition, had so overfilled the hospitals that retention of most casualties in the division areas became the rule. The shortage of motor fuel and the inaccessibility of forward units were contributing factors, making it necessary by the end of the month to retain at battalion and regimental aid stations even those with major injuries and illnesses. Eventually, thousands of such noneffectives strained every facility in the forward areas.[66]

Aid stations, normally without any holding capacity at all, attempted to treat 200–300 casualties, while clearing and collecting companies each held 600–900, in violation of standard practice. As long as the front remained stable, the lush tropical flora offered them unlimited cover and protection. But with so many helpless troops near the front, any movement along the battle line compelled immediate and massive evacuation. Being "within easy artillery range" when the enemy's final push came, the wounded and the medics who served them found no safety in the jungle without the immunity of the Red Cross emblem.[67]

The Fall

Like the defenders, the enemy had suffered severely from malaria, dysentery, and deficiency diseases. In February the surgeon of the Japanese *14th Army* estimated that 10,000–12,000 soldiers were ill, and enemy forces were depleted further when the early rapid victories in the Philippines resulted in major troop withdrawals for the Netherlands East Indies invasion. Reinforcements arrived only after successes in French Indochina, Singapore, and Malaya freed troops and aircraft for the Philippines. By April General Homma was ready to try again.[68]

[65]Rpt, Lt Col J. O. Gillespie, CO, Gen Hosp No. 2, to Surg, Phil Dept, 10 Mar 42, sub: Malaria Control, and Ltr, Lt Col A. F. Fischer, Svc Cmd, Luzon Force, to ACofS, Svc Cmd, Luzon Force, 18 Mar 42, sub: Source of Supply of Quinine for the Philippines, THU Note Cards, Historians files, HUMEDS, RG 112, NARA. See also Gillespie, "Malaria," in Hoff, ed., *Communicable Diseases: Malaria*, pp. 506–07.

[66]Cooper, "Medical Department Activities," pp. 32–34, file 314.7, HUMEDS, RG 112, NARA.

[67]Quotation from Cooper, "Medical Department Activities," p. 26. See also Gillespie, "Malaria," in Hoff, ed., *Communicable Diseases: Malaria*, p. 507.

[68]Gillespie, "Malaria," in Hoff, ed., *Communicable Diseases: Malaria*, p. 510. See also Historical Section, G–2, Far East Command, "*14th Army* Operations," Japanese Studies in World War II, 1:230–31, bound as Japanese Monograph No. 1, "Philippine Operations Record, Phase 1, 6 November 1941–June 1942," Ms 8–5.1 AC 1, CMH.

On 3 April the enemy renewed the offensive with a heavy attack against the left wing of the II Philippine Corps, in an attempt to gain Mount Samat. The attack developed quickly, with the result that three clearing stations crowded with casualties were in danger of being overrun by the enemy. Under supervision of the 12th Medical Regiment (PS), a general evacuation took place over three nights, beginning with that of 2–3 April. Convoys of buses evacuated the II Corps front, giving priority to stations nearest the fighting. Colonel Cooper wrote that "total chaos" reigned in the forward areas. "Roads were congested beyond description. In one instance a convoy was caught directly between enemy and friendly fire." A similar evacuation followed in the I Philippine Corps sector. In all, more than 7,000 patients were transported to rear areas during the period 2–7 April.[69]

The burden of receiving and caring for these casualties fell mainly on the personnel of General Hospital No. 2, whose patient census rose from 2,700 to 6,000 within six days. Most of the new invalids suffered from malaria, dysentery, malnutrition, and exhaustion. Hundreds of walking wounded staggered into General Hospital No. 1 as well. The morning of 7 April found 1,840 patients on the premises, while 400–450 waited for admission. But after the Little Baguio facility was twice severely bombed because of its proximity to the ordnance and quartermaster supply points, bed patients were transferred to Hospital No. 2. Despite the expansion, neither hospital received any new staff.[70]

"Already," said General King, "our hospital, which is filled to capacity and directly in the line of hostile approach, is within range of enemy light artillery. We have no further means of organized resistance." Hospital No. 2 would clearly be overrun the next day. Under cover of darkness, most of the seventy-eight American nurses and all medical personnel not absolutely required to tend the 12,000 sick and wounded crossed the channel to Corregidor. Corpsmen remained to care for the patients, whose welfare was commended to a small group of Japanese infantry at 1700 on 9 April 1942, just two hours after the Luzon Force was ordered to surrender.[71]

Three months of starvation diet, air and artillery bombardment, and disease had taken their toll. General King himself recalled: "When I went through the Japanese lines on 9 April 1942 to surrender the Luzon Force and got my first close view of the Japanese troops, I was surprised by the alert expressions on their faces and the vigor of their actions. I had grown so accustomed to lackluster eyes and lackadaisical movements." By March the combat efficiency of the troops had fallen by more than 75 percent as a result of malaria, intestinal infections, and malnutrition, and on 1 April Colonel Cooper had written that the combat efficiency of the troops "was rapidly approaching the zero point." This physical deterioration had become a determining factor in the military situation. As General Wainwright stated in his cable to General MacArthur after the

[69]Cooper, "Medical Department Activities," p. 36, file 314.7, HUMEDS, RG 112, NARA.

[70]Ibid., pp. 37, 56, file 314.7, HUMEDS, RG 112, NARA.

[71]As quoted in Morton, *Fall of Philippines*, p. 458. See also Cooper, "Medical Department Activities," pp. 37, 76–77, file 314.7; Interv, Redmond and Hatchitt, 6 Jul 42, pp. 3–4, file 000.71. Both in HUMEDS, RG 112, NARA.

surrender of Bataan, "Physical exhaustion and sickness due to a long period of insufficient food is the real cause of this terrible disaster." In turn, Japanese control of the sea and air was fundamental to the failure of supply. The medical disaster had resulted from the logistical failure, and physical depletion had rendered the defenders incapable of further resistance.[72]

Corregidor

One act remained. Corregidor, largest and most important of the fortified islands in Manila Bay, lay between the Bataan Peninsula and Cavite Province on the mainland of Luzon. Shaped like a tadpole, the island since the days of the Spaniards had been the center of the bay's defense. During the first few weeks after the outbreak of war, preparations had included the completion of Corregidor's extensive tunnel system. Work was still under way when, on 29 December 1941, the first enemy bombs fell. These attacks forced the USAFFE headquarters and the 200-bed Fort Mills Station Hospital to move underground, into Malinta Tunnel. A period of relative quiet followed in early months of 1942, while the Japanese expended their efforts in subduing Bataan. After Bataan's surrender on 9 April, they set up batteries there, and from about the tenth up through the final assault on 5 May, intense and regular bombing of Corregidor became the rule.[73]

Before the war, medical service on Corregidor had centered around the Fort Mills Station Hospital. To meet the demands of the increased garrison after 8 December, the surgeon of Harbor Defenses assumed supervisory control over all medical personnel on the fortified islands, in addition to his duties as commander of the Fort Mills Station Hospital. For medical purposes Corregidor was divided into zones, each of which received a detachment of two medical officers, plus noncommissioned officers and enlisted men. The zone surgeon cared for all troops within his area, provided for sanitation, and ensured that casualties were retrieved and evacuated to the Malinta Tunnel—a difficult and dangerous task for those who performed it.[74]

On 30 December 1941 the Malinta Tunnel facility began to function as a general hospital. Since it was equipped with an operating theater, all surgery for the fortified islands was performed here, and casualties from the other islands were ferried in at night for treatment. Malinta provided a bombproof shelter for the USAFFE headquarters; the Philippine government; the hospital, now of 1,000 beds; a massive storehouse; powerplants; and machinery. From a main east-west passage, 1,400 feet long and 30 feet wide, branched twenty-five tunnels, each about 400 feet long, at regular intervals. Laterals in

[72]First quotation from Edward P. King, "Recollections of the Defense Battles in Bataan," copy (n.d. but signed) in James O. Gillespie Notebook, Historians files, HUMEDS, RG 112, NARA; remaining quotations from Morton, *Fall of Philippines*, pp. 404 and 463. See also Cooper, "Medical Department Activities," p. 79, file 314.7, HUMEDS, RG 112, NARA. It was sadly ironic that three shipments of medical supplies—mainly quinine, sulfonamides, and vitamin preparations—arrived from the south, two by plane and one by submarine, after the capitulation of Bataan.

[73]Cooper, "Medical Department Activities," p. 82, file 314.7, HUMEDS, RG 112, NARA; Morton, *Fall of Philippines*, pp. 479–97.

[74]Cooper, "Medical Department Activities," pp. 81, 83, file 314.7, HUMEDS, RG 112, NARA.

turn spread from the branches. All had reinforced concrete walls, floors, and overhead arches, and a ventilating system. Double-track electric car lines ran along the main passage.[75]

The Malinta hospital had its own entrance north of Malinta Hill, and the wards were in concrete-lined laterals off the main tunnel. At the beginning of the siege there were eleven wards, the beds placed close together and alternated head and foot. After the second month military authorities opened two more large tunnels and lined the main hospital tunnel with beds. Doctors, nurses, and enlisted men were assigned to each ward, as they would be in a general hospital. Equipment was better than on Bataan. Lieutenant Redmond, evacuated from Bataan to the island fortress, marveled at the well-equipped surgical division compared to the crudities of Limay and Cabcaben; she "couldn't get over the wonder of white enameled tables beside each bed. They seemed almost indecently luxurious." Other comforts included an auxiliary lighting plant, neon lighting fixtures, flush toilets, showers, and running water. Yet living a mole-like existence underground also had certain discomforts, as Redmond soon realized: "The roar of shells and bombs was not so muffled as I had thought at first, but echoed and reverberated through the laterals; and the lack of real ventilation was hard on everyone, for even the elaborate system of fans did not keep the air from getting very stuffy and hot."[76]

When the Japanese stepped up the bombing and shelling of Corregidor in April, they quickly spread devastation over the island's surface. Grass fires blazed everywhere. Beach defense guns were destroyed, and buildings were demolished on Malinta Hill. On the twenty-second an air raid leveled an aboveground medical depot at Fort Mills housing noncritical supplies that had not been stored in Malinta Tunnel because of lack of space. Fortunately, many drugs stowed away in bottles and tins and placed in covered trenches were not lost in the raid. The shelling of Corregidor never stopped, and life in the tunnel soon became almost unbearable, with oppressive air, heat, dust, flies and other vermin, and the smell of the hospital and human bodies everywhere.[77]

By the middle of April the reserve supply of water on which the Malinta hospital drew had dwindled considerably. Showers were shut off. Quarrels flared among the crowded men and women. Yet Maude R. Williams, a hospital assistant who had escaped from Bataan to Corregidor, observed how those in the tunnel coped, finding solace in simple joys:

> Under the deepening shadow of death life on Corregidor took on a faster, more intense tempo. The smallest and most simple pleasures became sought after and treasured as they became increasingly rare and dangerous—an uninterrupted cigarette, a cold shower, a stolen biscuit, a good night's sleep in the open air.
>
> There was a heightened feeling that life was to be lived from day to day, without illusions of ultimate victory. Many sought forgetfulness in gambling. There was no way to spend the accumulated pay that bulged in their pockets and they rattled the dice or played endless bridge, rummy and poker.[78]

[75]Morton, *Fall of Philippines*, p. 474.

[76]Redmond, *I Served on Bataan*, p. 134.

[77]Ibid.

[78]Maude R. Williams in Leon M. Guerrero, "The Last Days of Corregidor," *Philippine Review*, May 43, as quoted in Morton, *Fall of Philippines*, p. 542. See also Belote, *Corregidor*, p. 140.

Casualties were mainly among those on beach defense duty, or at gun positions, though no one aboveground was safe. Coast artillerymen evacuated their own wounded to the Malinta hospital, while the 4th Marines took theirs to the Navy's lateral under the south side of Malinta Hill. Though the task of bringing Corregidor's sick and wounded to the hospital was a difficult and hazardous one, evacuation was usually fast and efficient, and in most instances a casualty reached the operating table less than an hour after being wounded. Good evidence of speedy evacuation was the fact that no cases of gas gangrene were recorded. When the island was under heavy bombardment, wounded could not be carried into the tunnel, and medics rendered only emergency treatment.[79]

As the bombing increased and casualties mounted, Williams wrote in her diary: "Every day it seemed that the line of stretchers grew longer. The narrow hospital corridors were crammed with the wounded, the sick, and the dying; the convalescents were hurried out to make room for fresh casualties." To treat the increasing number of patients, the hospital expanded into three more laterals. The staff utilized every inch of space, lining the walls with beds. Redmond noticed that luxuries disappeared one by one: "Double-decked and triple-decked beds in the hospital; civilian refugees sleeping in packed rows on the tunnel floors; two meals a day, again, and scanty rations . . . dreadful, familiar and unmistakable signs that the end was drawing near."[80]

Despite such conditions, as well as the hopelessness of the situation, the health of the Corregidor garrison remained relatively good. Life there was not comparable to Bataan, though the troops suffered from respiratory diseases induced by confinement in the damp dust-laden tunnels. Bataan survivors brought malaria with them, and shell holes increased fly and mosquito breeding grounds, but no epidemics broke out. A basic reason was careful sanitary inspection by medical officers. Medicines, too, were readily available, for a stock had been built up before the war adequate to care for 5,700 troops for six months. Food, though monotonous, was enough to carry the soldiers through June on half rations. By then some vitamin-deficiency diseases had begun to appear—the first one noted was beriberi. Yet only a small fraction of the personnel showed evidence of suffering from any type of vitamin deficiency, for canned goods gave small but balanced meals.[81]

Surprisingly, few psychiatric cases were recorded. The consensus of Colonel Cooper and his fellow medical officers was that the situation on Corregidor, like that on Bataan, discouraged breakdowns because the island offered no escape from reality. Although official medical records fail to list combat fatigue as a problem on Corregidor, some of the garrison may have been affected, especially antiaircraft artillery

[79]Cooper, "Medical Department Activities," pp. 79, 81–82, file 314.7, HUMEDS, RG 112, NARA; Morton, *Fall of Philippines*, pp. 536–40.

[80]Williams in Guerrero, "Last Days of Corregidor," as quoted in Morton, *Fall of Philippines*, p. 544; final quotation from Redmond, *I Served on Bataan*, p. 134.

[81]Memo, Lt Col J. O. Gillespie to Gen Marshall, 26 Jan 42, sub: Medical Supplies, THU Note Cards, Historians files, and Cooper, "Medical Department Activities," pp. 81, 83, file 314.7, HUMEDS, RG 112, NARA; Morton, *Fall of Philippines*, p. 535; Belote, *Corregidor*, pp. 132, 142–43. The relative affluence of Corregidor caused much resentment on Bataan prior to its fall.



ARMY NURSES ON CORREGIDOR *just after their capture*

crews when air attacks were at their most intense. Early in the war, however, the condition often passed unrecognized by doctors and unreported by the soldiers themselves, whose sense of manliness forbade them to show fear. Survivors tended to agree that their morale had not weakened until the final days, when even the greatest optimists realized that no help was coming.[82]

Corregidor fell to enemy encirclement and assault, not to hunger or disease. By 5 May the Japanese had taken all the fortified islands of Manila Bay except Corregidor, and their artillery fire had laid waste its entire north side. On that day landings began. Though casualties were heavy, the Japanese were able to establish a beachhead. Some troops advanced across the island to the southern shore; others moved westward toward Malinta Hill, the main objective of the landing. By 0130 on the sixth that force had established a north-south line across the island, with artillery and tanks already coming ashore. American coast and antiaircraft artillerymen left their guns to fight as infantry. However, the Japanese soon were able to infiltrate the American lines and also to set up their light artillery and use it with devastating

[82]For a recent discussion of combat stress in war, see Roger J. Spiller, "Shell Shock," *American Heritage* 41 (May–Jun 90): 75–87.

effect. American casualties were heavy—600 to 800 killed and about 1,000 wounded. Since the few litter-bearers were among the casualties, the wounded remained in the front line. Medical personnel at the ruined Fort Mills supply depot were captured that day. At 1000 hours General Wainwright, concluding that nothing was to be gained by further resistance, decided to surrender. During the remainder of the day the defenders destroyed all weapons, and at midnight firing ceased.[83]

The surrender of the southern islands that followed brought the campaign to an end, though small groups of Americans refused to surrender and soon joined Filipinos in resisting the Japanese occupation.[84] For most, however, prison camps and a new ordeal of suffering lay ahead. The medical lessons of the campaign centered on the extraordinary attrition imposed on both sides by the conditions of jungle fighting and on the overriding importance of seaborne supply to maintain even small forces in island warfare. Difficult logistics, attrition resulting from disease, and the normal problems of combat medical support all interacted. With their Pacific fleet shattered and their most advanced garrison lost, Americans faced up to a new and most difficult kind of war, one in which an army could be shattered as much by the environment as by the enemy.

[83]Morton, *Fall of Philippines*, pp. 552–61.

[84]See Chapter XI for the story of the resistance movement in the Philippines.

CHAPTER II

A New Kind of War

The war against Japan was fought in an area that covers roughly one-third of the Earth's surface, from Burma to Hawaii and from Alaska to Australia. While fighting on mainland Asia involved Chinese, British, and American forces,[1] the decisive struggles took place on the islands of the Pacific.

The vast ocean is dotted with landmasses large and small. Marking its northern and western boundaries are the large archipelagoes of the Aleutians, the Kuriles, the home islands of Japan, the Ryukyus, and the Philippines. The Moluccas, the northern coast of New Guinea, the continent of Australia, and the two large islands of New Zealand form the southwestern boundaries of the disputed region. The central and South Pacific contain three main groups of islands: Micronesia (Mariana, Caroline, Marshall, and Gilbert Islands); Melanesia (Solomon Islands, Bismarck Archipelago, New Hebrides, New Caledonia, Fiji, and the intervening islands); and Polynesia (Hawaiian, Samoa, Tonga, and Marquesas Islands and other groups).

Distances are great: 7,750 miles of ocean separate San Francisco from Sydney, Australia; some 1,600 miles divide Fiji from Auckland, New Zealand; and more than 900 miles separate New Caledonia, then a major Allied base, from Guadalcanal. In 1942, outside Australia and New Zealand, port facilities were primitive at best. Unloading was slow; storage was difficult because of the damp climate and tropical heat; and wounded and sick evacuees endured long and difficult journeys. In this island world medical supplies like everything else moved only by sea or air, and the conditions that developed on Bataan demonstrated the consequences when supplies failed.

The cold windswept Aleutians, the jungle-clad islands of Melanesia, and the palm-fringed atolls of Micronesia all played host to American soldiers. Despite varied climates and landforms, however, some factors are fairly constant throughout the Pacific. Rainfall is heavy, especially during the summer, with about 60 inches a year compared to 32 inches for the Atlantic. North of the equator most rain falls from June through October, south of it from November to April. On the coral atolls—small low-lying islands, seldom rising more than 20 feet above sea level—seasonal rains combine with warm temperatures to nourish coconut

[1]See Chapter 9 on operations in the China-Burma-India theater.

palms, low-growing brush, and, in the marshy areas, luxuriant jungle growth. On the volcanic islands—often large complex landmasses with steep cliffs and wooded plateaus—the climate gives rise to dense jungle, rain forest, and high tropical grass. The Aleutians are as wet, and often bitter cold as well.

In wartime each environment brought its own characteristic medical consequences, from frostbite to jungle rot. Even in the tropical regions, geography and the accidents of settlement and trade made great differences in disease patterns. Some islands were ravaged by malaria, while others were free of it. Coral islands rarely have freshwater catchments for mosquitoes to breed; on the other hand, volcanic islands, with their numerous streams, grasslands, and nonporous black soil, are rich in such areas. While the Army fought in all Pacific environments, its efforts for the first two years of the war were concentrated in the steaming disease-ridden jungles of Melanesia.[2]

Endemic Diseases

Some of the ills faced by Army men and women were familiar communicable diseases, under control in civilian life in the United States but newly dangerous under combat conditions. Others were exotics unfamiliar to most American doctors, spread by vectors little studied by entomologists. Unlike prewar Western colonizers, Americans could not transplant and maintain the traditional methods of public health in the midst of war. Military discipline, new drugs like Atabrine, and new insecticides had to take up the slack. Among the commonest diseases were those spread by poor water supplies and inadequate waste disposal, especially the various forms of dysentery. The incidence of venereal disease and yaws depended to a great extent upon the health of the civilian population and the opportunities for fraternization. Sexual contacts between soldiers and civilians were common, especially in communities made destitute by war and in those, such as Fiji and Aitutaki, where local mores encouraged promiscuity. Yaws, related to syphilis but spread by nonvenereal contact, was a hazard in rural areas. Unwashed skin, high humidity, and contact with infected natives led to bacterial and fungal infections. Schistosomiasis—infection with a blood fluke commonly found in the tropics—could only be avoided by keeping troops, their clothing, equipment, and even their vehicles out of infected water, a difficult precaution to take in combat. Hookworm disease could result from contact with infected earth. None of these diseases were normally fatal, but all could put soldiers out of action as effectively as if they had been combat casualties.

[2]Unless otherwise indicated, section on distance, climate, and terrain based upon Fairfield Osborn, ed., *The Pacific World: Its Vast Distances, Its Lands and the Life Upon Them, and Its Peoples* (New York: W. W. Norton and Co., 1944), pp. 21–42; Buell Whitehill, "Administrative History of Medical Activities in the Middle Pacific," block 1, pp. 1–12, and block 18b, pp. 1–5, file 314.7, Historical Unit Medical Detachment (HUMEDS), Record Group (RG) 112, National Archives and Records Administration (NARA), Washington, D.C.; Paul A. Harper et al., "New Hebrides, Solomon Islands, Saint Matthias Group, and Ryukyu Islands," in Ebbe Curtis Hoff, ed., *Communicable Diseases: Malaria*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963), pp. 409–14; CSurg, USAFISPA, Annual Rpt, 1942, pp. 1–8, file 319.1–2, HUMEDS, RG 112, NARA; Paul F. Russell, "Epidemiology of Malaria in the Philippines," *American Journal of Public Health* 26 (Jan 36): 1–7.

Arthropod-borne diseases were common and sometimes fatal. Spread by two species of *Aedes* mosquito, dengue (breakbone fever) occurs in practically all areas of the Pacific and on mainland Asia. Another *Aedes* mosquito transmits filariasis, caused by a parasitic worm that is endemic to Okinawa and islands of the central and South Pacific. Sandfly fever, a short-term febrile malady transmitted by the bite of one or more species of the genus *Phlebotomus*, appears sporadically in China, Burma, and India. Chiggers, the larvae of trombiculid mites, spread the febrile infection scrub typhus throughout the Pacific and Asia. A rodent flea transmits murine typhus, which was common in Hawaii, the Philippines, Japan, and Korea. Louse-borne epidemic typhus, though more prevalent in Europe than in the Pacific, appeared occasionally in Japan and Korea. Rodent fleas also carried plague in China, Burma, and India.

Many species of the *Anopheles* mosquito transmit malaria, the most important and militarily significant disease in the Pacific. Where climate and rainfall are constant, as on the northern coast of New Guinea, the Bismarck Archipelago, the Solomon Islands, and the New Hebrides, malaria existed throughout the year. Pronounced wet and dry seasons, such as typify the southeast coast of New Guinea and the northwest coast of Guadalcanal, caused malaria to become seasonal, appearing twice a year between the extreme wet and dry months, usually the most feasible time for military operations. In many places heavy rainfall produced wet grasslands laced with flowing streams that provided breeding areas for anopheline mosquitoes, complicating malaria control. The region of the China-Burma-India theater contains fifty species of anopheline mosquitoes, of which eleven are known vectors; the Philippines record thirty-two species and four vectors. In part, the insect is widespread because different species have distinct breeding habits. Some anophelines prefer to breed in rice paddies, others in slow-running streams, in springs with grassy margins, in coastal lagoons, in irrigation ditches, in wells, or in the shallows of swamps and lakes. Some favor clear water, others brackish; some sunlight, and others shade. Some breed in water as transient as rain-filled footprints, hoofprints of animals, or ruts left by vehicles.

In the tropical areas of Burma and India, malaria vectors are especially prevalent where the great river systems flow into wet lowlands—for example, Burma's Irrawaddy River valley or India's great Hindustan Plain. On malarious South Pacific islands the mosquito breeds in native clearings, along inland streams, in coastal swamps and lagoons created by poor drainage, or where sandbars block the flow of streams running down from the hills to the sea. On Guadalcanal the drainage courses of five rivers transect a broad alluvial plain on the north central coast at intervals of about 3 miles. Meandering between the rivers, sluggish streams terminate in coastal swamps and lagoons, creating mosquito breeding reservoirs. During combat and the occupation that followed, Allied and enemy forces created new water catchments in shell and bomb craters, in foxholes, and in abandoned bomb shelters and gun positions.

The cause of malaria is the plasmodium, a parasitic protozoan that attacks the red blood cells and liver, and reproduces itself both in its human host and

in the mosquito that carries it from one victim to another. Different species of *Plasmodium* cause different kinds of malaria, of which the commonest in the Pacific were vivax, or benign, and falciparum, or malignant. Malignant malaria could kill, while the effects of the so-called benign form included bouts of chills and fever, physical debility, and frequent relapses. To prevent epidemics, command responsibility was as important as the techniques of preventive medicine and suppressive therapy. But line officers were often slow to relearn the importance of malaria to military operations.[3]

Problems of Leadership

Early in 1942 Australia emerged as the great Allied base, playing a role in the Pacific war like that of Great Britain in the European fighting. Even before American forces in the Philippines left Manila, Secretary of War Henry L. Stimson and Chief of Staff General George C. Marshall had decided to use the southern continent as a base to supply General MacArthur and provide him air support. Although Britain and America agreed in December 1941 to concentrate their forces against Germany first, the deteriorating situation in the Pacific dictated the diversion of some forces, and the War Department took steps to send nine air groups there. Meanwhile, a convoy guarded by the light cruiser USS *Pensacola*, bound for Manila when war broke out, had already been diverted to Australia. Aboard the transport USS *Republic* were a miscellany of troops that included air combat, field artillery, and service personnel, as well as a number of officers, among whom were six doctors. At sea, organization of the forces on this and other ships into a command began under Brig. Gen. Julian F. Barnes, who chose a staff of eighteen officers, including a surgeon, Maj. George S. Littell, MC. Barnes announced that his new headquarters in Australia would be known as the United States Forces in Australia (USFIA).[4]

Rapid changes of command ensued. Arriving at Brisbane on 22 December, the same day as Barnes, Brig. Gen. Henry B. Clagett relieved Barnes, pending the end-of-month arrival of the newly appointed USFIA commander, Maj. Gen. (later Lt. Gen.) George H. Brett of the Army Air Forces (AAF). Shortly after New Year's Day, 1942, Brett's headquarters relocated from a local hotel in Brisbane to Melbourne.

[3]Whitehill, "Medical Activities in Middle Pacific," block 1, pp. 1–14, 55, 56, block 14, pp. 6–8, and block 18a, pp. 4–5, file 314.7, HUMEDS, RG 112, NARA. See also Earl Baldwin McKinley, ed., *A Geography of Disease* (Washington, D.C.: George Washington University Press, 1935); George MacDonald, *The Epidemiology and Control of Malaria* (London: Oxford University Press, 1957), pp. 95–97; James Stevens Simmons, *Global Epidemiology: A Geography of Disease and Sanitation* (New York: J. B. Lippincott Co., 1944). For up-to-date information on the diseases cited, see Kurt J. Isselbacher et al., eds., *Harrison's Principles of Internal Medicine*, 12th ed. (New York: McGraw-Hill Book Co., 1991).

[4]Account drawn primarily from OofSurg, USAFIA, Diary, 10, 12, 21, 27–30 Dec 41, file 314.81, Daily Diary, 10 Dec 41–31 Jul 42, HUMEDS, RG 112, NARA. See also Maurice Matloff and Edwin M. Snell, *Strategic Planning for Coalition Warfare, 1941–1942*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1953), pp. 87–88; Louis Morton, *Strategy and Command: The First Two Years*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1962), pp. 151–52; and Blanche B. Armfield, *Organization and Administration in World War II*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963), pp. 410–11.

On 5 January the USFIA was redesignated the United States Army Forces in Australia (USAFIA). In order to provide a logistical system to support the coming troop buildup, General Brett established four territorial commands—Base Section 1 at Darwin, 2 at Townsville, 3 at Brisbane, and 4 at Melbourne. He also assigned surgeons to each base section headquarters and dispatched them to set up offices and organize medical care for the small number of existing forces and the greater number to come. Planning for a system of military hospitals and medical depots began. Littell, who was promoted to lieutenant colonel on 30 January, filled the position of Chief Surgeon, USAFIA, until 1 February, when Col. George W. Rice, MC, arrived from the United States with orders from Surgeon General Magee to serve as theater surgeon.

A few days earlier, however, Colonel Carroll had arrived from the Philippines on the hospital ship *Mactan* with more than 200 seriously wounded patients.[5] Senior to Rice, Carroll became chief surgeon on 7 February; Littell became Carroll's supply officer for a time, and later his deputy. Rice, after serving as deputy, became a base section surgeon following a sharp dispute with Carroll over medical policy. Rice's resentment over being displaced as chief surgeon may have been a factor in the dispute.[6]

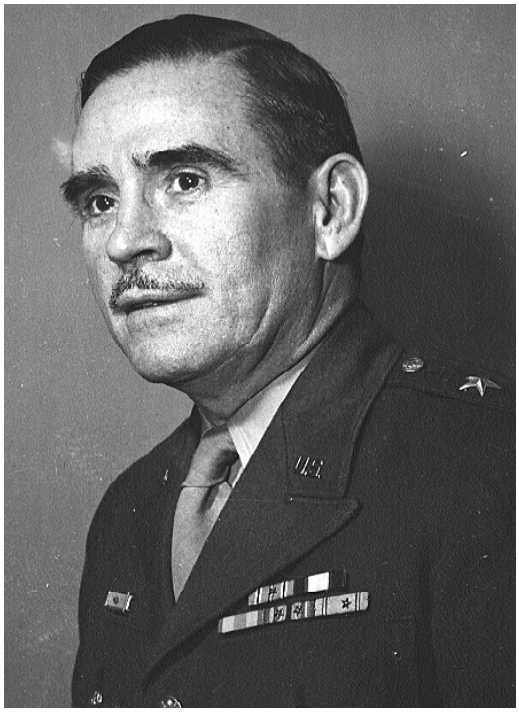
Almost fifty-one years old, Colonel Carroll was a long-service Army medical officer, adept at military medicine but less successful at headquarters politics. He had worn the uniform since 1916, when he joined the punitive expedition into Mexico as regimental surgeon for the 24th Infantry. During World War I he served with the American Expeditionary Forces in France as assistant commander of a hospital train, and with a surgical company. During the 1920s and 1930s Carroll held positions at Army hospitals in the United States, the Philippines, and at Tientsin, China,



MAJ. GEN. GEORGE W. RICE, MC
(Rank as of 8 May 1948)

[5]On Colonel Carroll's escape from the Philippines on the *Mactan*, see Chapter I.

[6]OofSurg, USAFIA, Diary, 2, 5, 7 Feb 42, file 314.81, Daily Diary, 10 Dec 41–31 Jul 42; Ltr, Col George W. Rice to Maj Gen James C. Magee, 12 Feb 42, file 201 Correspondence, Col George W. Rice, 1942–1944. Both in HUMEDS, RG 112, NARA. See also Armfield, *Organization and Administration*, pp. 411–12; Morton, *Strategy and Command*, p. 168; and Department of the Army, *Reports of General MacArthur*, 4 vols. (1950; reprint ed., Washington, D.C.: Government Printing Office, 1966), 1:21. One other officer—Maj. Jesse T. Harper—served briefly as chief surgeon during the confused period before Carroll's arrival.



BRIG. GEN. PERCY J. CARROLL, MC
(Rank as of 23 June 1943)

before returning to the Philippines in 1940 for duty as post surgeon at Fort Stotsenburg and then as commanding officer at Sternberg General Hospital. After escaping to Australia and assuming the position of chief surgeon in early 1942, he planned for an office organization consisting of hospitalization, supply and finance, personnel, evacuation, sanitation and vital statistics, dentistry, nursing, and veterinary sections. Not until April, however, was he able to fill all of the vacant positions.[7]

One of the first tasks of the nascent Office of the Chief Surgeon was to procure and ship supplies for the relief of the Philippines. Colonel Littell, who continued to serve as medical supply officer until Maj. Alfonso M. Libasci, MC, arrived from the United States in early April, scraped together quinine, morphine, anesthetics, vitamins, and other drugs from Australian sources, depleting that country's small stocks; from incoming vessels; and from the United States. Twelve shipments (ten by air and two by ship) were smuggled through the Japanese blockade before the fall of Bataan on the ninth. By that time, however, General MacArthur had arrived in Australia, greeted by enthusiastic crowds. His coming signaled the true birth of the theater, but also the creation of divided commands that shaped the Pacific fighting and the medical role in it for years to come.[8]

As MacArthur settled in, the Anglo-American Combined Chiefs of Staff on 24 March assigned the United States responsibility for the conduct of the war in the Pacific. Confronted by the need to satisfy both armed services—no candidate for single commander could be found who would be acceptable to both the Army and the Navy—the U.S. Joint Chiefs of Staff responded by dividing the region into two commands. On 18 April MacArthur became Supreme Commander of Allied Forces, General Headquarters, Southwest Pacific Area (SWPA), initially located in Melbourne, which included the Philippine Islands, Australia, the Netherlands East Indies except Sumatra, and New Guinea. On 8 May the commander-in-chief of the Pacific Fleet, Admiral Chester W.

[7]CSurg, SWPA, Annual Rpt, 1942, pp. 16–19, file 319.1–2, HUMEDS, RG 112, NARA.

[8]Charles M. Wiltse, *Medical Supply in World War II*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1968), pp. 404–06.

Nimitz, was named commander of the Pacific Ocean Areas—the vast central region that stretched from the Bering Straits to Antarctica, including the Hawaiian Islands and, in a westward extension, Japan itself. Nimitz' command in turn was subdivided into three sectors: North Pacific Area, Central Pacific Area, and South Pacific Area (*see Map 3*). The Joint Chiefs instructed MacArthur and Nimitz to contain Japan's southward advance, to hold Australia and key islands of the South Pacific as bases for future operations, and to protect their lines of communications with the United States.[9]

Theater and Army reorganization soon impacted on the Office of the Chief Surgeon, USAFIA. On 20 July, following the model established by a War Department reorganization in March, USAFIA became a logistical command called the United States Army Services of Supply (USASOS). Brett remained in charge of the air forces in the Southwest Pacific Area, and MacArthur's deputy chief of staff, Brig. Gen. Richard J. Marshall, took over as the USASOS commander. Though the USASOS was responsible for hospitalization, medical supply, and evacuation, Carroll's role diminished under the new setup. As chief surgeon to a services of supply headquarters rather than to a single command responsible for the entire American Army in the Southwest Pacific Area, he could not impose his recommendations on the ground and air forces, and thus his position, responsibilities, and authority remained ill-defined. Meanwhile, at MacArthur's supranational headquarters, Carroll's former subordinate, Colonel Rice, emerged in September as Surgeon, General Headquarters, SWPA, further diluting Carroll's power. The subsequent move of the USASOS to Sydney and of General Headquarters, SWPA, back to Brisbane further complicated relations between the two surgeons.

Working with only one assistant and operating through G–4, SWPA, where his office was located, Rice attempted to make medical policy for the theater, influencing General Headquarters to reject Carroll's plans when he disagreed with them. He had no doubt of his proper role: "I am the theater surgeon," he subsequently would declare to the surgeon general. Carroll complained bitterly to his commander, General Marshall, and the two went to General Headquarters. Here, MacArthur listened to Carroll and then declared, "The medical department is your baby." But verbal support could not undo the organization charts. Ground and air forces alike continued as independent commands. Carroll's contact with MacArthur remained limited: "I only talked with him eight or ten times" while in the Southwest Pacific Area, he later recalled.[10]

The air surgeon, who headed the medical section at Brett's headquarters, was Lt. Col. Nuel Pazdral, MC. Though AAF units had their own field dispensaries, they shared hospitalization and

[9]*Reports of General MacArthur*, 1:28–31; D. Clayton James, *The Years of MacArthur*, 3 vols. (Boston: Houghton Mifflin Co., 1970–85), 2:100–19.

[10]First quotation from Ltr, Col George W. Rice to Maj Gen Norman T. Kirk, 14 Jul 43, file 201 Correspondence, Col George W. Rice, 1942–1944, HUMEDS, RG 112, NARA; remaining quotations from Interv, Mary Ellen Condon-Rall with Percy J. Carroll, 26 Sep 80, pp. 40 and 55, U.S. Army Center of Military History (CMH), Washington, D.C. See also *Reports of General MacArthur*, 1:28–34; James, *MacArthur*, 2:100–19, 175. On the organization of SWPA, see Morton, *Strategy and Command*, pp. 403–11.

evacuation facilities with the ground forces and relied on the Army supply system for medical supplies. By the summer of 1942 most air combat units operated out of northern Australia; hence, Colonel Pazdral divided his organization into northeastern and northwestern districts, each with a flight surgeon, along territorial lines corresponding to the existing base sections. On 3 September air units in Australia and New Guinea were amalgamated into the Fifth Air Force—the new name of the Far East Air Force—under Maj. Gen. George C. Kenney. Col. Bascom L. Wilson, MC, now became air surgeon, and Colonel Pazdral surgeon of the newly activated Air Service Command. By the end of the year the Fifth Air Force's service, fighter, and bomber commands each had a staff surgeon. Flight surgeons often shared in the attitude of stiff-necked independence that typified many airmen, who saw their method of waging war as the wave of the future. "They didn't want us to have anything to do with their medical care," Carroll said. The air surgeon did not, however, operate any hospitals, though small infirmaries were established at the scattered bases.[11]

So matters stood until February 1943. Then, in order to relieve General Headquarters, SWPA, and the USASOS of administrative responsibilities, MacArthur on the twenty-sixth reestablished Headquarters, United States Army Forces, Far East (USAFFE), and named Carroll to be chief surgeon. USAFFE's commander was MacArthur himself, who had taken this means of bringing most of the American forces in the Southwest Pacific Area under his own direct control. Beneath USAFFE were the USASOS; the recently arrived Sixth Army;[12] and, after July, the Fifth Air Force. Now Carroll, who was promoted to brigadier general on 23 June, could hope to obtain directives on medical problems that would be binding on all American land and air forces in the theater. However, in September Carroll returned to the USASOS when the Office of the Chief Surgeon, like other special staff sections, was once again put under the service forces.

As before, no basic regulation defined the command relationships between Carroll, Rice, the air surgeon, and the Sixth Army surgeon, and only limited practical cooperation developed among them. No special staff section was established at General Headquarters to recommend theater medical policy that would be binding on all Allied forces,[13] and no new USAFFE surgeon was named to guide medical affairs for the American forces. Medical planning for campaigns was the work of the surgeons of the

[11]Quotation from Interv, Condon-Rall with Carroll, 26 Sep 80, p. 44, CMH. See also Air Evacuation Board, SWPA, "The Medical Support of Air Warfare in the South and Southwest Pacific, 7 December 1941–15 August 1945," Report No. 35, sec. 1, vol. 1, pt. 1, pp. 11, 13, file 314.7–2 (Army Air Forces—Medical Services) SPA, SWPA, and Surg, 5th Air Force, Annual Rpt, 1942, pp. 2–3, file 319.1–2, HUMEDS, RG 112, NARA; Armfield, *Organization and Administration*, pp. 415, 436; Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II*, 7 vols. (Chicago: University of Chicago Press, 1948–58), 1:403–26.

[12]The Sixth Army reached Australia early in 1943. It served briefly under Allied Land Forces, headed by an Australian general, and then, as a separate task force, under USAFFE for the New Britain campaign.

[13]In March 1943 MacArthur established the Combined Advisory Committee on Tropical Medicine, Hygiene, and Sanitation, composed of a group of American and Australian specialists, to develop preventive medicine plans and policies for the Allied forces. The committee functioned as an unofficial staff section until June 1944. The role of the committee is discussed later in this chapter.


ASIAN-PACIFIC
THEATERS OF OPERATIONS
1942–1945
0
1600
Miles at the Equator
USSR
MANCHURIA
KOREA
CHINA
TIBET
NEPAL
BHUTAN
CBI THEATER
(UNTIL 23 OCT 44)
CHINA THEATER
(24 OCT 44)
INDIA-BURMA THEATER
(24 OCT 44)
FORMOSA
INDIA
BURMA
THAILAND
FRENCH
INDOCHINA
SOUTH
CHINA
SEA
LUZON
PHILIPPINES
LEYTE
MINDANAO
PALAU IS
NORTH
BORNEO
SARAWAK
MALAYA
Singapore
SUMATRA
BORNEO
CELEBES
INDIAN
OCEAN
NETHERLANDS EAST INDIES
JAVA
SOUTHWEST PACIFIC AR
AUSTRALIA
NEW G
80°
100°
120°
140°
40°
20°
0°

MAP 3


USSR
Attu
180°
160°
ALEUTIAN IS
NORTH PACIFIC AREA
PACIFIC OCEAN AREAS
40°
PACIFIC
OCEAN
wo Jima
MIDWAY IS
CENTRAL PACIFIC AREA
HAWAIIAN IS
20°
MARIANA IS
MARSHALL IS
Guam
Truk
CAROLINE IS
Makin
Tarawa
BISMARCK
ARCHIPELAGO
GILBERT IS
0°
UINEA
SOLOMON IS
APUA
ELLICE IS
EA
Guadalcanal
SOUTH PACIFIC AREA
160°
180°
160°

Australian-led ground forces and the Sixth Army. Medical officers in the field sometimes received redundant or contradictory directives, and nonmedical officers took advantage of the confusion to run medical activities as they pleased.

Within the theater, sharp criticisms of Carroll's medical policies were common. Except in areas controlled by the field forces, fixed hospitals in the theater were unquestionably under his control. Yet the chief surgeon consistently underestimated SWPA hospitalization requirements, seeking first fixed beds equal to 9 percent of the troop strength in 1942, later 11, and finally 12 percent, while the surgeon general preferred 15 percent. In a theater beset by disease he followed pre–World War II practice by failing to establish a separate preventive medicine section (*Chart 1*). He shuffled hospital commanders about, causing anger and resentment. An extremely hard worker, he did not always use his time with discretion. Despite the vast size of the theater, Carroll made few trips to the field; attempted to run affairs from his own office; and tended, at least during 1942, to keep his officers, including himself, deskbound. He seemed suspicious of the consultants sent to him by the surgeon general; a year or more passed before he used them fully as clinical teachers and as conduits of information between himself and medical officers in the field. One probable effect was to intensify the suspicions of the newly inducted civilian physicians toward Regular Army doctors, for whom they already possessed little enough professional respect.[14]

Carroll's difficulties apparently stemmed in part from his own nature and background, and in part from that of the theater he served. Organization in General MacArthur's theater was seldom clear, and headquarters politics were complex at best. Carroll's problems may have been due in some measure to an otherwise admirable lack of ego and a talent for intrigue, both of which were needed to define his position when the organization charts deprived it of formal authority. As the following will make clear, his contribution to the growth of the medical service in the Southwest Pacific Area was nonetheless immense.

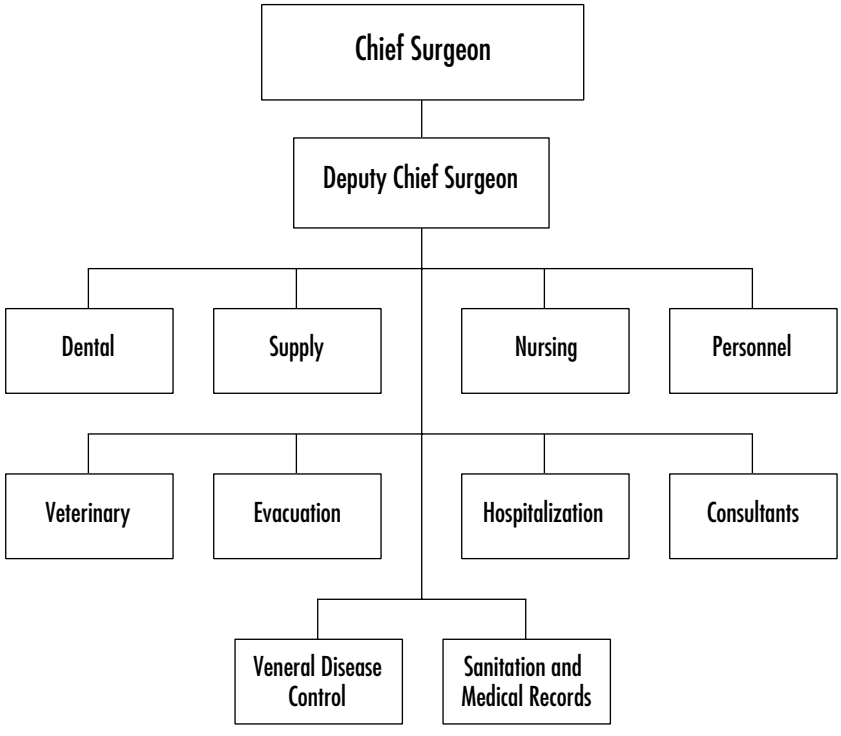
The Australian Base

Problems of command soon influenced the relations that developed between the increasing numbers of U.S. forces stationed "down under" and their Australian hosts.[15] Troops of the *Pensacola* convoy—and those who followed them—found the Australians friendly, not only because of the common language and similar cultural backgrounds but also for reasons of self-interest. With Australian forces fighting for the British Empire in North Africa and elsewhere, the Americans were the nation's best guarantee against Japanese attack.

[14]Memo, Col William L. Wilson to Gen Kirk, 20 Oct 43, sub: [Observations and Facts Obtained During Visit to SWPA], pp. 3–6, and encl. 1, file 333 (Visit of Col Wilson to SWPA) 1943; Interv, Col S. Alan Challman, 13 Sep 45, p. 5, file 000.71; Interv, Lt Col Gottlieb L. Orth, 12 Jun 47, file 000.71. All in HUMEDS, RG 112, NARA. See also Henry M. Thomas, Jr., "Southwest Pacific Area," in W. Paul Havens, Jr., ed., *Activities of Medical Consultants*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1961), pp. 482–84.

[15]Unless otherwise indicated, section drawn from Eugene T. Lyons, "Australia and New Zealand," in Ebbe Curtis Hoff, ed., *Civil Affairs/Military Government Public Health Activities*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1936), pp. 533–64.

CHART 1—ORGANIZATION OF THE OFFICE OF THE CHIEF SURGEON, USASOS, SWPA, JANUARY 1943



Source: Adapted from Rpt, CSurg, USASOS, SWPA, 1 Jan 43, sub: Medical Service in Australia, p. 2, file 319.1–2, HUMEDS, RG 112, NARA; Thomas, "Southwest Pacific Area," in Havens, ed., *Activities of Medical Consultants*, pp. 477–78.

As large as the United States but thinly settled (about 7.5 million population in 1941), Australia possessed diverse environments, natural and artificial. The cities of the eastern coast, including Melbourne, Sydney, Canberra, and Brisbane, resembled other urban areas of the developed world to which, despite geography, they belonged. Much of the interior and the land to the west, however, were almost without population, the scattered settlements resembling those of the contemporary American Southwest. Confusing to Americans were the seasons (those on the *Pensacola* convoy left home in late autumn and arrived in Brisbane as summer began) and the fact that in Australia the tropics lay toward the north.

Distances, too, were reminiscent of the American West, but Australia's transport network and industrial base were less developed. A nation built on the herding industry, it was far from being self-sufficient in manufactured goods, and even in some foodstuffs. In public health the nation showed variations as wide as the contemporary United States, advanced in the cities but primitive in remote and poor regions. The war and

the tropics both lay close to Australia's northern and northeastern shores, and towns and countryside alike proved unready to support a vastly increased population of strangers.

Clearly, in early 1942 cooperation was needed among American medical personnel, their Australian military counterparts, and the civil authorities. But the weakness of the command structure made such cooperation on a national level difficult to achieve. Instead, civil affairs administration tended to shift downward to the level of the base section, or even of the local camp or airfield. Increasing this tendency toward local solutions to health problems was Australia's political structure, which, like that of the United States, was federal in form, with self-government characteristic of not only the six states but also the local cities, towns, boroughs, and shires (the last closely resembling American counties). Base section surgeons, often working with no more than a few enlisted assistants, opened dispensaries, found medical supplies, established relationships with local hospitals and public health officials, and endeavored to survey health conditions over areas of countryside sometimes equal to several large American states. Fortunately, in April additional medical, dental, and veterinary officers arrived from the United States to staff the various base sections, bringing them up to adequate levels.

Aided by the new arrivals, base section surgeons focused their efforts on preventive medicine to control communicable diseases, especially malaria and dengue; to improve waste disposal, water supply, and the processing of foodstuffs; and to suppress venereal disease (VD). Malaria resisted local control, for the movement of troops made it a national public health issue. But such problems as tuberculosis, in milk cattle, and venereal disease lay within the domain of state and territorial governments, and those of waste disposal and water supply within that of local town councils. In the absence of a theater-level preventive medicine officer, base section surgeons sought out Australian military surgeons and formed local committees to investigate health problems afflicting both armies—the Allied Services Health Council in Perth, for example, and the Cooperative Allied Sanitation Committee in Townsville. In such groups every unit in the area was represented, and military police officers sometimes sat in with the medics.

However, planning by such groups was not enough in itself to bring about needed changes, nor was the cooperation of the civil government always freely given. Sometimes, when wells had to be dug, marshes drained, cattle inspected, and anti-VD campaigns mounted, labor and funds also were required. Often, poor and remote villages were unable, or unwilling, to make improvements but were quite amenable to the Americans doing so, provided that they paid all costs. The Army engineers were sometimes called upon to dig drains, or at least to furnish the equipment. The locals' reasoning was that outhouses and shallow wells had presented no threat to health until the hordes of American troops arrived. Even in Rockhampton, a town of 35,000 that served for a time as the I Corps headquarters, most residents refused to screen their windows, preferring maximum ventilation, even though *Aedes* mosquitoes and the dengue that they carried were both present in the area. The corps and the 1st Evacuation

Hospital had to provide mosquito control personnel and undertake a program without local assistance.[16]

The Medical Department's Veterinary Corps played a substantial role in the American exploitation of Australian food sources. The early days of World War II found Army veterinarians somewhat uneasily balanced between their longstanding duty of caring for animals and their newer duty of food inspection. Animals were still important in moving the Army, especially under the conditions of the Pacific war. Australia was the main source of horses for two theaters, the Southwest Pacific Area and the Navy's South Pacific Area; during 1942 alone, over 2,500 were shipped to the South Pacific Area, and all required examination and care. Veterinary officers—only twenty-five arrived in the Southwest Pacific Area during the year, plus nine enlisted men—found inspection of meat and dairy products surprisingly difficult in such a great livestock-raising country. The milk supply was deficient both in quantity and quality, and milk that could have been rated Grade A by U.S. standards was unobtainable. Testing of cattle for tuberculosis was spotty and public health supervision of farms and pasteurizing plants inadequate. Meat produced for export was carefully examined, but meat for Australian Army rations—which, in the beginning, American troops shared—was often of the poorest quality.[17]

In attempting to change the practices of their Australian hosts, veterinary officers employed both leverage and assistance. During 1942 U.S. troops ate their own field rations or Australian Army rations, but by early 1943 they consumed food purchased directly from local sources. As a result, veterinary officers were able either to impose U.S. standards or, if these were not complied with, to deny future contracts. A canceled contract, however, produced no food, and producers normally were anxious to secure future business. Hence, both sides had strong incentives to compromise on their differences. Assured of higher standards, veterinary officers offered producers their assistance in procuring pasteurizing equipment and similar essentials. Opposition to change on the part of the Australians usually arose not from a reluctance to raise standards but from a shortage of men and materials in a country whose small population and undeveloped resources were overcommitted to the war effort.

Venereal disease control was both national and local. In May 1942, with most U.S. military personnel still encamped nearby the ports of entry, the VD rate reached what proved to be a highpoint in Australia, 45.8 per 1,000 troops per annum. In these pre-penicillin days the problem was a serious one for the Army; even uncomplicated cases of gonorrhea required an average of thirty days of hospitalization for each patient. Hence, though the incidence was not remarkable by comparison with other early wartime rates among American forces (the 1940 rate for the entire Army had been 42.5, before an anti-VD campaign brought it down), the rise evoked an effective reaction both from Americans and Australians. A

[16]Surg, I Corps, Annual Rpt, 1942, p. 18, file 319.1–2, HUMEDS, RG 112, NARA.

[17]CSurg, SWPA, Annual Rpt, 1942, pp. 24–26, file 319.1–2, HUMEDS, RG 112, NARA; Everett B. Miller, *United States Army Veterinary Service in World War II,* Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1961), pp. 312, 318–20, 499.

venereal disease control section was organized in Carroll's office in July 1942 under Lt. Col. Ivy A. Pelzman, MC. Control officers were appointed in every base section. Support of local public health officials and local police was, of course, essential. Some habits appeared paradoxical; prostitution was legal in Australia, and yet prudery made candid discussion of the problem difficult. Nevertheless, information campaigns were developed, sometimes using posters and bulletins printed in the United States. Prophylactic stations were set up in cities and towns frequented by troops, and Americans and Australians freely used each others' facilities. Infected soldiers were required to give full information about their sexual contacts, and the provost marshal turned over the information to an Australian magistrate, who issued an order to the civil police to take the woman into custody for examination. If infected, she was held and treated until well. Efficiency varied from place to place, but by the end of the war 50–95 percent of contacts were being traced. The result of the cooperative endeavor—and the movement of many men to remote areas or the fighting front—was a remarkable fall in the VD rate among American troops to 4.2 per 1,000 per annum by November 1944, a 90-percent decline from mid-1942.[18]

Malaria was a serious threat to Australia, not only because of the infected refugees from the East Indies and the Philippines but also because of the increasing operations by American and Australian troops in New Guinea during late 1942. Even in the early part of the year a present menace existed, with a larger one predictably to follow when soldiers returned from the fighting zone for rest and retraining. Yet custom was strong and the Australian government showed little concern until May, when three original—that is, locally acquired—cases showed up among American troops in Townsville, a community in the northeastern state of Queensland, and fifty-two more among civilians in nearby Cairns. Australian citizens were concerned that malaria-infected soldiers returning from Guadalcanal and Papua to hospitals in Queensland would spread malaria in epidemic proportions throughout the continent. Malaria was fast becoming a political as well as a military problem, one that civil and military authorities had ample cause to cooperate in solving.

Col. N. Hamilton Fairley, AMC, a specialist in tropical medicine with the Australian Army Medical Corps, presided at a series of meetings called by alarmed officials in 1942, at which experts from the military and the states of Queensland and New South Wales discussed the problem with representatives of the Army Medical Department. An informal committee was established that investigated reports of epidemics, developed plans, and carried out control measures through a melange of agencies, military and civilian. Soldiers of both armies worked to drain mosquito breeding grounds, to resettle the infected aboriginal population, to treat cases as they occurred, to evacuate recurrent cases to nonmalarious areas, and to ensure that military personnel

[18]Thomas H. Sternberg, et al., "Venereal Diseases," in Ebbe Curtis Hoff, *Communicable Diseases Transmitted Through Contact or by Unknown Means*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, 1960), pp. 285–87. On VD in the Army, see also Allan M. Brandt, *No Magic Bullet: A Social History of Venereal Disease in the United States Since 1880* (New York: Oxford University Press, 1985), p. 170.

took suppressive drugs and used mosquito netting.

By October, however, further action was needed, for the New Guinea fighting caused theater disease rates to soar. With an epidemic in progress, Parliament, alarmed by the return of heavily infected Australian troops, ordered an investigation. The danger that mosquitoes would spread malaria to civilians was acute. In November the Australian Army's director of hygiene proposed that troops returning from the fighting zone be barred for six months from Australia north of the nineteenth parallel until all recurrent cases had been detected and sent to hospitals. In December General Headquarters, SWPA, adopted the recommendation, hoping by a continental quarantine to prevent the epidemic from spreading in the troop-staging areas of tropical Australia, where the climate and the plentiful anophelines most favored the disease. Despite all measures, malaria rates were high, by the end of the year reaching 500 cases per 1,000 troops per annum in the Southwest Pacific Area as a whole and 1,500 or more in New Guinea.[19]

Meanwhile, Colonel Fairley had traveled to Washington and London between September 1942 and January 1943 to obtain antimalarial supplies (including drugs, mosquito netting, and insect spray) that were either not manufactured in Australia or were of poor quality. Fairley persuaded service and civilian medical authorities of the imminent dangers of malaria in the Southwest Pacific and obtained promises of antimalarials from both the United States and Great Britain. It was during Fairley's Washington visit that the Office of the Surgeon General, which had been studying the problem of malaria control in areas where the U.S. Army was to operate, recommended that malaria control organizations be formed in overseas theaters. On 24 October 1942 Surgeon General Magee invited General MacArthur and other theater commanders to submit, without delay, requests for the additional military and sanitary personnel needed to control malaria.[20]

After a period of organizing and training in the United States, the first malaria survey and control team arrived in the Southwest Pacific in February 1943. The early months of 1943 also saw a marked improvement in efforts to prevent disease of all sorts, including malaria. In March General MacArthur set up, under Fairley, the Combined Advisory Committee on Tropical Medicine, Hygiene, and Sanitation, a group of American and Australian specialists with broad authority to develop plans and policies to be followed by all Allied forces. MacArthur implemented most of the committee's recommendations by directives to the troops. (Before the committee disbanded in June 1944,

[19]On disease rates in various theaters, see ASF [Army Service Forces] Monthly Progress Rpt, 28 Feb 43, sec. 7, p. 5, The Historical Unit (THU) Note Cards, Historians files, HUMEDS, RG 112, NARA. The highest disease rates worldwide continued to be recorded in the North African theater, which showed 8,516 cases per 1,000 troops per annum in August 1943; see Justin M. Andrews, "North Africa, Italy, and the Islands of the Mediterranean," in Hoff, ed., *Communicable Diseases: Malaria*, p. 262. On rates in the Southwest Pacific Area, see CSurg, SWPA, Annual Rpt, 1942, pp. 1–4, file 319.1–2, HUMEDS, RG 112, NARA.

[20]Mary Ellen Condon-Rall, "Allied Cooperation in Malaria Prevention and Control: The World War II Southwest Pacific Experience," *Journal of the History of Medicine and Allied Sciences* 46 (Oct 91): 496–97.

MacArthur issued fifteen directives, fourteen of which dealt with malaria.) The measures that were adopted ranged from raising shipping priorities for antimalarial supplies to the specification of new insecticides for use in the Southwest Pacific. Committee members contacted division and base surgeons and tactical commanders to explain the directives, which became the basis for appropriate orders issued by the Allied armies. Acting on behalf of the committee, the Australian members also maintained contact with civil authorities, who by this time were thoroughly aroused to the dangers of malaria and vigorously protested the presence of any malarious soldier north of the nineteenth parallel.

Because of the deficiencies in the SWPA staff structure, the committee, with its direct access to MacArthur, gradually assumed the role of a preventive medicine section for the entire theater. As such, its relations with Rice tended to be good and with Carroll less than satisfactory. The fact was plain that by the decision or whim of the commander-in-chief, this ad hoc group exercised powers that were denied to both claimants to the role of chief surgeon.[21]

Other diseases were far less serious than malaria. In April 1942 an outbreak of jaundice brought 2,400 hospital admissions and 4 deaths to U.S. soldiers in Australia. The cause was serum hepatitis, spread by contaminated yellow fever vaccine—a worldwide phenomenon among American military personnel at the time. Other problems included respiratory diseases in the southern state of Victoria, a cold and unpleasant place for living in tents during the winter months of July and August. Yet, overall, and despite the malaria epidemic, disease rates for troops in Australia remained generally comparable to those in the United States. In terms of mortality, none was greatly significant; the chief killer was war, for 67 percent of all deaths of American soldiers in the theater during 1942 resulted from enemy action.[22]

All in all, both Americans and Australians seem to have benefited from their association in public health during 1942–43. Australia received a strong stimulus to upgrade food treatment that had evident advantages for its own army and people; the United States found a base among Allies who grasped the essentials of preventive medicine and wanted mainly equipment and labor, which Americans were ready, in many cases, to supply. By confronting the formidable distances in Australia and by meeting the challenge of malaria, U.S. forces gained useful experience, for few medical problems throughout the Pacific war were to be as persistent as these. Finally, despite the difficulties of the command setup, Colonel Carroll was able, during 1942, to embark on important changes aimed at adapting the structure of Army medicine—designed for conventional warfare on land—to the kind of warfare that lay ahead.

[21]Thomas A. Hart and William H. Hardenbergh, "The Southwest Pacific Area," in Hoff, ed., *Communicable Diseases: Malaria*, pp. 536–42; Condon-Rall, "Malaria Prevention and Control," pp. 499–504. Apparently, good relations were maintained with Rice by personally consulting him before the committee made its decisions on medical policy. The same courtesy could not be extended to Carroll because of the physical distance of his office in Sydney.

[22]CSurg, SWPA, Annual Rpt, 1942, pp. 1–6, file 319.1–2, HUMEDS, RG 112, NARA. Eighty percent of all combat deaths occurred in December, skewing the proportion for the year as a whole.

The Base Sections

The number of Allied forces in Australia grew slowly but steadily. The increase in medical personnel, however, never kept pace with the total increase in Army forces, for shipping priority went first to combat troops. The shortage was made worse by the unavoidable dispersion of medical personnel into the various base sections, to small units, and to camps in remote locations. In the early months of the war the need for medical personnel was most apparent in the hospitals and field units. The pressure eased somewhat with an influx of hospital units in June 1942, but September brought new problems when they lost 10 percent of their personnel for the development of portable hospital units.[23] At the end of the year the majority of medical units in the Southwest Pacific Area were still operating below strength. The shortage persisted in 1943 despite the fact that the number of medical personnel increased approximately 2.5 times during the year.[24]

The Southwest Pacific Area's service command formed the only part of the growing military establishment where the chief surgeon's technical authority was unquestioned. After July 1942 the USASOS had a total of seven base sections, territorial commands that covered the entire Australian continent. Their boundaries corresponded roughly to those of the six states, with Queensland, lying in the far northeast closest to New Guinea and the battle zone, divided into two. The base sections provided hospital care for the troops stationed in them and for evacuees from the fighting, and featured a system of medical supply depots through which materiel received in the east coast ports reached the field forces. By late 1942 American troops had been shifted in great numbers to the northern areas of Australia. In consequence, the most active logistical commands were Base Section 1, comprehending the Northern Territory and fragments of two states, and Base Sections 2 and 3, which divided most of Queensland (*see Map 4*).

For Base Section 1 the headquarters was established at Darwin, the closest port to the Japanese. The town was small and undeveloped, and possessed no railway connections to other Australian cities. A road and a railway line ran south to the village of Birdum, where the tracks ended. Thence, rutted dirt roads led across some of the most forbidding parts of the Outback: south, to Alice Springs, near the geographical center of the country; and southeast, to the isolated town of Mount Isa, terminus for a railroad that ran east to the port of Townsville. The section's greatest diameter was about 1,000 miles. Mostly AAF personnel served at airfields strung along the road and rail corridor, from which pilots attacked Japanese shipping and supported Allied operations in New Guinea.

The Japanese were also interested in Darwin. On the morning of 19 February

[23]The development of portable hospital units is discussed later in this chapter.

[24]CSurg, SWPA, Annual Rpt, 1942, pp. 16–19, and CSurg, USASOS, SWPA, Annual Rpt, 1943, p. 13, file 319.1–2, HUMEDS, RG 112, NARA; *Strength of the Army*, 1942, 1943. In December 1942 the Army was authorized 6.5 physicians per 1,000 troops in overseas theaters; one year later the ratio was reduced to slightly less than 6. The enlisted strength of the Medical Department was set at 7 percent of total Army strength. See John H. McMinn and Max Levin, *Personnel in World War II*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963), pp. 69–91.



MAP 4

1942 waves of enemy bombers, dive-bombers, and fighters attacked the town, sinking the ships at anchor, demolishing the wharf, and damaging the nearby Royal Australian Air Force field and many private homes. A 2,000-pound bomb hit the American wing of the local hospital, and Australian military hospitals were strafed and bombed. In the aftermath the base section command abandoned Darwin; its small medical section evacuated American patients to Australian hospitals in outlying towns. All was in confusion, for the medical service had "no organization . . . no definite plan of action" and, as yet, little formal

collaboration existed between the two Allies.[25]

Base Section 1 headquarters moved 12 miles south to the village of Birdum, where for a time the medical section worked on the open porch of the local hotel. Using available personnel, a field hospital of forty beds was improvised nearby an Australian field ambulance.[26] The first substantial hospital was the work of a field unit, the nondivisional 135th Medical Regiment, which dispatched both a clearing company and an ambulance company from Mount Isa to care for American troops. The medical convoy rolled for 758 miles over a rutted road so dusty that the vehicles kept an interval of 1 mile "to obtain adequate visibility because of the dust," and on arrival set to work. The platoons built Coomalie Creek Hospital from the ground up, using waterpipe obtained from Darwin and plumbing fixtures from "wherever they could be found." Showers, latrine buildings, and mess halls were fabricated of saplings and bamboo. Fourteen tents held the wards. The hospital served the 49th Fighter Group, the 71st Bomber Squadron, base section personnel, and a melange of engineer, quartermaster, artillery, and antiaircraft units.[27]

The medics at Base Section 1 found much to do. The airmen suffered an epidemic of dengue, and dysentery was common, brought on by polluted water. They had little fresh food, eating canned leeks, canned beetroot, and canned cabbage to the point of nausea. Heat was intense, reaching 140°F. in summertime; in the dry season the red dust was deep, turning to gluey mud in the wet; flies, mosquitoes, and ants abounded. Local civilians were casual about public health. Farmers and town dwellers alike used outhouses and drew their water from shallow wells, and milk was commonly unpasteurized. The refugees infected with malaria exacerbated conditions. Once bitten by anophelines in the area, the stage was set for a rapid rise in the disease.

Exhausted quartermaster drivers, like their trucks, broke down on the interminable dirt tracks, and small medical detachments pitched tents at the bores, or wells, where men and vehicles alike stopped to take on water. One such detachment worked in a basin surrounded by rocky hills, sparsely covered with scrubby eucalyptus trees and dead spinifax grass. Flies were numerous and showed "a peculiar affinity for the eyes, ears, nose, and mouth." The incessant wind whipped the dust into small cyclones the Australians called "Whirlies." Amid the blowing dust, the cleanliness needed for medical procedures was difficult to attain, and tent ropes and pegs needed constant atten-

[25]Quotation from Surg, Base Sec 1, Historical Rpt, Jan–Sep 42, p. 3 (see also p. 2), attached to Gottlieb L. Orth and John A. Gallogly, comps., "Medical History of Base Section No. 1," file 319.1–2 (Base Section 1) 1942–1944, HUMEDS, RG 112, NARA. Also in the HUMEDS collection, see Surg, 5th Air Force, Annual Rpt, 1942, pp. 1–3, file 319.1–2. In April 1942 all civilians were evacuated from Darwin, which became a military reservation.

[26]The Australian field ambulance was equivalent to an American aid station.

[27]Quotations from Surg, 135th Med Regt, Annual Rpt, pp. 26 and 28 (see also pp. 25, 27, 29), THU Note Cards, Historians files, HUMEDS, RG 112, NARA. The base section headquarters moved to the hamlet of Adelaide River in July; a year later, however, a hospital of 125 beds, the largest between Mount Isa and Darwin, still functioned near Birdum. See Surg, Base Sec 1, Quarterly Rpt, Jan–Mar 43, p. 1, attached to Orth and Gallogly, comps., "Medical History of Base Section No. 1," file 319.1–2 (Base Section 1) 1942–1944, HUMEDS, RG 112, NARA.

tion if the whole camp was not to blow away. The drivers called the Mount Isa–Birdum road "The Burma Road of Australia," and while they counted no battle casualties they did suffer an extraordinarily high syphilis rate, presumably because they spent their paychecks freely on the prostitutes of Mount Isa, a raucous mining town of 3,500.[28]

Evacuation from Base Section 1 depended on regular Qantas flights, on military aircraft, and on flying boats that carried casualties from Darwin to Brisbane. Air ambulances—presumably light planes, whose use was made necessary by the great distances and the roughness of the corrugated roads—brought patients from the hospitals to airfields or the Darwin harbor, and alert medics kept an eye out for any empty space on outgoing aircraft that might hold a patient. The pace of hospital construction also quickened, as the Americans brought in a sawmill and began to turn out lumber, hitherto unobtainable. Some 3,000–4,000 troops moved in during the spring of 1942; by midyear there were 7,700 plus. As American hospital units entered Australia, personnel at the base section increased. Hospitals often were divided, to serve the scattered camps, the overnight stations along the supply routes, and the airfields and other installations that now dotted the vast region. Medical supply depots followed the same trend, dividing and subdividing to reduce the cost in time, wear, and fuel that travel entailed. Yet as the end of the year approached, the base section surgeon noted in his diary that his office, located in the dispensary tent, still consisted of one desk and one table and his staff of one officer and one enlisted man "who may shortly be transfered [*sic*]."[29]

If this was bush medicine at its most frontierlike, the two base sections that shared the state of Queensland grew more rapidly, received a heavy influx of casualties from New Guinea, and built up, before the year was over, an elaborate organization of fixed hospitals to serve them. In mid-1942 Base Section 2 was responsible for New Guinea casualties as well as for the 17,597 troops stationed within its Australian boundaries, but in August the Advance Base was formed at Port Moresby on Papua to support the forces operating north of the Torres Strait. Base section hospitals varied from tiny sections operating in remote towns to larger establishments along the main evacuation route. The 12th Station Hospital in Townsville—which functioned, in fact, as an evacuation hospital—occupied twenty-five private homes, covering a city block in a residential suburb. The commander took pride not only in his well-appointed wards but also in his new morgue, with a refrigerator box, and the graduate embalmer he had located. A dramatic influx of casualties began about 1 December, overworking the medics and embalmer, and led quickly to further expansion of the hospital. The end of 1942 found the base section's medical

[28]Med Dept Det, 29th QM Truck Regt, Quarterly Rpt, Oct–Dec 42, p. 1, file 314.81 War Diary, 1 Jul 42–30 Jun 43, HUMEDS, RG 112, NARA.

[29]Quotation from Surg, Base Sec 1, Confidential Diary Summary, 23 Dec 42, p. 1, attached to Orth and Gallogly, comps., "Medical History of Base Section No. 1," file 319.1–2 (Base Section 1) 1942–1944, HUMEDS, RG 112, NARA. In the same document and file, see Surg, Base Sec 1, Med Sit Rpt, 18 Jun 42, p. 2. See also Rpt, OofSurg, USAFIA, 1 Jun 42, sub: Status of Evacuation in Australia, file 370.5 Air Evacuation Reports, SWPA, 1942, HUMEDS, RG 112, NARA.



DISPENSARY AND AMBULANCE IN THE AUSTRALIAN BUSH

establishment large and thriving, with one general hospital, five station hospitals, a field hospital, and eight portable hospitals, as well as a medical supply depot. Hospital personnel served in locations that ranged from suburban Townsville to the evocatively named settlement of Kangaroo Dump, where Dispensary D worked from 7 August 1942 until 22 September 1944.[30]

Similarly, Base Section 3 grew rapidly after its formation in January 1942 to serve 10,973 troops already in the area. By spring of 1943 it controlled two general hospitals, two evacuation hospitals, two surgical hospitals, eight portables, the 3d Medical Laboratory at Brisbane, a medical supply depot, a total of over 2,500 beds, and nearly 1,800 patients. Here too, life was fairly comfortable in the hospitals but much less so for small detachments in the bush. Near Rockhampton the 33d Surgical Hospital suffered through heavy summer rainfall and flooded latrines. But its personnel floored the wards to protect patients from the wet, as well as landscaped the grounds with fresh plantings, rustic fences, and arches that gave the area a pleasant parklike appearance. Dengue, malaria, and a variety of skin diseases were the main medical problems, while hernias, appendectomies, and infected wounds of various sorts kept the surgeons occupied. The Red Cross showed movies at the hospital, and weekly dances were held at the officers club on Friday evenings. The hospital baseball team played for the hotly contested

[30]Surg, Base Sec 2, Historical Rpt, Jan–Dec 42, pp. 7, 12, and Ltr, Surg, Base Sec 2, 18 Apr 42, in Surg, Base Sec 2, Quarterly Rpt, Apr–Jun 42, pp. 1–2, THU Note Cards, Historians files, HUMEDS, RG 112, NARA.

championship of a league set up by American units. Afternoon teas marked the commander's birthday and officer promotions. A world away in the bush was a detachment undergoing intensive training with a field artillery battalion, whose camp, pitched in a swamp, turned to a morass during the heavy rains.[31]

Dental as well as medical care was provided to the troops through the base sections. A dental officer joined the staff of each base section surgeon and set up a clinic at the headquarters as well as a dental laboratory, where the few available technicians made prostheses. The difficulty of shipping large items from the United States meant that cabinets and dental chairs had to be bought from local manufacturers. Most of the year was given over to establishing the clinics and doing routine work—dental surveys of the troops, examinations, and fillings. Toward the end of 1942, however, wounds of the jaws and face appeared among the casualties returning from New Guinea, and these went to specialists in oral surgery who worked in the large fixed hospitals. The familiar SWPA medical pattern of the skilled few caring for large numbers of troops spread over a vast area was especially true of dentists; at the end of 1942 only 187 dental officers, scattered over Australia and New Guinea, were providing service to more than 100,000 soldiers, themselves divided among many units and small posts.[32]

Army nurses were slow to appear in the base section hospitals. In 1942 nurses entered Australia in the same piecemeal fashion as other medical personnel. On the *Mactan* with Colonel Carroll was Lieutenant Fellmeth, who became the first chief nurse of the new USAFIA command. However, on 12 April Capt. M. Jane Clement reported for duty in Melbourne and succeeded Fellmeth in the same fashion as Carroll had taken over from Rice. Meanwhile, however, substantial numbers of nurses, many of them well trained professionally but ignorant of Army ways and lacking even uniforms, had begun to arrive—238 at Melbourne in February; 78 more at Brisbane in early April; and a few days later another 265 at Melbourne, accompanying hospitals that disembarked at the same time. Twenty-one more, evacuees from the Philippines, arrived in May, but their physical condition was such that all save 3 were sent home. In June a dozen hospitals made port with their complements, including more than 500 nurses. Problems in adapting to life in Australia were many. The women's clothing, for example, was clearly inappropriate for the bush or jungle, and the chief nurse's office designed new field uniforms that featured slacks and culottes.

At first, reluctance on the part of the chief surgeon to detail women to the northern camps resulted in hospitals losing their nurses, who stayed in quarters at Melbourne. The women, unable to do their jobs, were unhappy and the hospitals were deprived of essential workers. But by summer many were assigned to remote stations, including the dismal ones at Cloncurry and Mount Isa. "The flies swarmed like

[31] 33d Surg Hosp Quarterly Rpt, Jan–Mar 43, pp. 1–4, and Med Dept Det, 148th FA Bn, Quarterly Rpt, Oct–Dec 42, p. 2, file 314.81 War Diary, 1 Jul 42–30 Jun 43. See also Surg, Base Sec 3, Historical Rpt, Oct–Dec 42, pp. 2–3, file 319.1–2 (Base Section 3) 1942–1943. All in HUMEDS, RG 112, NARA.

[32] CSurg, SWPA, Annual Rpt, 1942, pp. 20–21, file 319.1–2, HUMEDS, RG 112, NARA.



ARMY NURSE WEARING THE NEW FIELD UNIFORM

bees," reported Captain Clements after an inspection trip, "the dust was ankle deep, and the ants were innumerable." When the New Guinea fighting grew in intensity, new doubts assailed the Army Medical Department about sending female nurses to the embattled primitive island. But in October 1942 the nurses of the 153d Station Hospital arrived in Port Moresby, working there with such success that nurses of other hospitals followed. Ankle-deep mud and tropical rains succeeded the arid Australian bush. But the women proved more durable than even the chief nurse had anticipated, bringing scientific care to the wounded and a boost to morale as well.[33]

The base sections were Carroll's demesne in the feudal world of the Southwest Pacific Area. Beginning 1942 as the target of enemy attacks, at least in the far north, they had found by the year's end their true role as parts of a communications zone that comprehended the entire Australian continent, but especially its eastern and northeastern coasts. The system provided indis-

[33]CSurg, USASOS, SWPA, Annual Rpt, p. 21, file 319.1–2, HUMEDS, RG 112, NARA. Conditions in New Guinea are treated extensively in Chapter IV.

pensable support to the operations that began in New Guinea during September. The services of the base sections went beyond backup: As will be seen, their hospitals fathered many of the units that accompanied the troops into battle.

Hospitalization and Evacuation

During 1942 an array of Army hospitals sprang into being like an Arabian Nights city. But more work than magic went into the achievement. In the early days, when troop strength was at a minimum, providing hospitalization for the sick and injured meant dependence on the Australians—on not only their military but also civilian hospital system. As early as 15 January the Australian government's Administrative Planning Committee agreed to furnish supplies and hospitalization from either military or civilian sources for three to four months, and longer if necessary. Through the assistance of a joint U.S.-Australian Hospitals Subcommittee and the surgeon general of the Australian Army, Colonel Carroll arranged for the temporary hospitalization of soldier patients in Australian military facilities. Some soldiers were treated in civilian hospitals, though the chief surgeon preferred to avoid doing so because of the problems involved in paying private physicians. In March the USAFIA set up the Committee on the Adaptation of Australian Materials and Supplies, of which Colonel Littell was a member, to explore ways of "utilizing to the maximum the existing productive capacity of Australia without sacrificing the health, comfort or identity of the U.S. Army." Americans paid for Australian goods and services through a lend-lease arrangement, and the two Allies determined the charges for medical treatment on a reciprocal basis in either of their hospitals.[34]

But the chief surgeon wanted to establish U.S. Army hospitals to take care of American troops wherever it was possible. He anticipated that about 100,000 troops would arrive during 1942, for whom beds must be provided on a 9-percent basis. In search of the requisite 9,000 beds, he first sought to obtain existing buildings—schools, resort hotels, private houses, and civilian hospitals—to be converted into military medical facilities. He soon discovered, however, that the alteration of existing buildings was costly and, for the most part, unsatisfactory. (The plant of the new Royal Melbourne Hospital, given outright to the 4th General Hospital by the Australians, was a much appreciated exception to the rule.) Carroll came to prefer construction of the standard Army fixed hospital. But such work required time, labor, and materials that were in short supply. Meanwhile, the influx of U.S. personnel and equipment began. Apparently, the first Army hospital to operate in Australia was the 153d Station Hospital, which arrived at Brisbane on 9 March and, after receiving permission to occupy the Queensland Agricultural High School and College

[34]Quotation from Memo, Col B. M. Fitch, AG, USAFIA, to Gen and Spec Staff Secs, USAFIA, 24 Mar 42, sub: Committee on Adaptation of Australian Materials and Supplies, THU Note Cards, Historians files, HUMEDS, RG 112, NARA. See also Interv, Condon-Rall with Carroll, 26 Sep 80, CMH; Alan S. Milward, *War, Economy and Society, 1939–1945* (Berkeley: University of California Press, 1977), pp. 172, 200, 276, 355; E. Ronald Walker, *The Australian Economy in War and Reconstruction* (New York: Oxford University Press, 1947), p. 147; Lyons, "Australia and New Zealand," in Hoff, ed., *Civil Affairs*, pp. 536, 550; and Wiltse, *Medical Supply*, p. 403.

near Gratton, admitted its first patient on the nineteenth.[35]

The summer was an anxious time as the chief surgeon waited for the personnel of twelve more hospitals, all of whom had sailed from the United States on an Army transport. "I counted the days," Carroll reported to Surgeon General Magee, "until that ship docked and the personnel with it." The doctors, nurses, and corpsmen who made the trip probably had similar feelings. Leaving the New York Port of Embarkation in a convoy, the ship was crowded; "quarters can be adequately described by three words, standing, sitting, and reclining room," wrote a unit historian. The first blackout at sea, with "weird blue lights, dark corridors, and passing human shadows," brought home the reality that a war was on. Running under Navy protection, the convoy arrived safely at the Panama Canal. Blimps hovered over the docks, the sun was fierce, and the air was humid. In the Pacific a cruiser and a destroyer took over the task of guarding the transports, and for a time the trip was idyllic, amid "flying fish, the phosphorescent ocean, and the southern cross." Then an epidemic of diarrhea struck. The number of cases reached four digits, and the voyaging medics coined such names as the "'turkey trot'" and the "'mess kit blues'" for the malady. Often ill, their drinking water rationed to two glasses per passenger each day, their baths cold showers in seawater, they finished the trip as an uncomfortable, jam-packed, often miserable lot. But they did not encounter any Japanese submarines or planes, and docked safely in Melbourne after thirty-nine days at sea. The long voyage ended anticlimactically, as they traveled from the docks to their first billets in Australia by electric tram.[36]

For the chief surgeon the anxiety was not over. The equipment of the hospitals was on another ship, which broke in two and sank near Brisbane. "I feel that my heart is in pretty good shape," wrote Carroll, "because when I was called on the phone and told that the ship with the equipment of twelve hospitals was lost I still survived the shock." But the equipment was salvaged, and on 1 September the medical service passed something of a landmark: After that date more Australian military personnel were being cared for in U.S. Army hospitals than the reverse.[37]

Quality proved to be a problem among some new arrivals, one not easily solved, for the pressure of an advancing enemy and the deficiency of personnel interacted to make retraining difficult. Among enlisted men, Carroll soon discovered that a minority were of hopelessly poor quality. Thus one small hospital reported that its cook's "personal hygiene was filthy" and impossible to correct; that a man listed as a medical

[35]Rpt, OofCSurg, USASOS, SWPA, to SG, U.S. Army, 12 Jan 43, sub: Extracts From Report of the Chief Surgeon, S.O.S., Australia, December 15, 1942, p. 1, file 319 (Medical Service—1942); Interv, Lt Col John A. Lazzari, 5 Jul 45, file 000.71; 153d Sta Hosp Historical Rpt, 21 Mar 43, sub: Summary of Diary From Activation to Present Day, p. 2, file 314.81, War Diary, 1 Jul 42–30 Jun 43. All in HUMEDS, RG 112, NARA. See also Darryl McIntyre, "Hospitalization Policy for United States Army Personnel in Australia, 1942–1945," p. 5, copy in CMH.

[36]First quotation from CSurg, USASOS, SWPA, Semimonthly Rpt, 29 Aug 42, p. 4, THU Note Cards, Historians files; remaining quotations from 6924V [28th Surg Hosp] Historical Rpt, 7 Dec 41–30 Sep 42, pp. 1 and 2, file 314.81 War Diary, 1 Jul 42–30 Jun 43. Both in HUMEDS, RG 112, NARA.

[37]CSurg, USASOS, SWPA, Semimonthly Rpt, 29 Aug 42, p. 4, THU Note Cards, Historians files, HUMEDS, RG 112, NARA.

technician was unable to read a thermometer or remember drug dosages; and that two or three others were "unable or unwilling to distinguish between feces and food." Those who were teachable ran afoul of the fact that during 1942 only one technician's school existed in the theater, because trained personnel could not be spared from their duties to operate schools or to teach in them. The medical command was too harried and too poor in resources to train most of its new personnel, except on the job, or to find any solution for those who proved unsatisfactory but to transfer them to other units where, presumably, they would prove to be equally unsatisfactory.[38]

The problem of retraining was not confined to enlisted men. Some medical officers needing an introduction to wartime medicine and the diseases of the Southwest Pacific were fortunate, for they were able to study chemical warfare physiology in schools conducted by the Australian Army and tropical medicine in Australian universities. Yet few seem to have received the instruction they needed. Many civilian doctors entering the Army for the first time were almost wholly unprepared for military medicine, which—prevention-minded, impersonal, devoid of anything describable as a doctor-patient relationship—differed from civilian practice in crucial ways. No systematic effort was mounted to retrain these professionals, and some reports suggest that an undercurrent of incomprehension, resentment, and distrust marred the relations between Regular Army physicians and volunteers.[39]

Carroll was more successful in changing the size and equipment of the hospitals to meet the conditions of Australia. Mobility was a continuing headache for all elements of the U.S. Army, including the Medical Department. A single rail line connected the cities of Australia's eastern and southern coasts; it lay close to the ocean, subject to enemy attack; and track gauges sometimes changed at state borders, compelling supplies and passengers alike to be unloaded and loaded again. As already noted, roads were mostly poor and distances immense. Early on, the chief surgeon found that the large mobile hospitals—the 750-bed evacuation hospital and the 400-bed field hospital (intended for use as a station hospital)—were unsuitable to warfare either in Australia, if a Japanese invasion came, or in the islands of the north, in the event the Allies went over to the attack. He began to think about splitting the field hospitals into two and the "evacs" into three self-sustaining units. To support the American camps, many smaller units were preferable to a few large ones, for the troops were dispersed over a vast crescent—from Darwin to Adelaide. The smaller unit that he envisioned must have its equipment reduced to a minimum for movement over the bad roads, especially if the enemy knocked out the railway, and be as mobile as possible to support small concentrations of troops moving

[38]Quotations from Ltr, Capt A. F. Jonas, CO, 6th Port Hosp, to CSurg, USASOS, SWPA, 1 Dec 42, sub: Informal Report of Monthly Activities, bound in "Histories, Portable Surgical Hospitals in WW II," HUMEDS, RG 112, NARA. See also Thomas, "Southwest Pacific Area," in Havens, ed., *Activities of Medical Consultants*, pp. 482–83.

[39]CSurg, SWPA, Annual Rpt, 1942, p. 18, file 319.1–2, HUMEDS, RG 112, NARA; Thomas, "Southwest Pacific Area," in Havens, ed., *Activities of Medical Consultants*, pp. 482–83.

through the Australian bush, where, very often, roads were nonexistent.[40]

By the end of 1942 twenty-three American hospitals had arrived in Australia: four general, thirteen station, two field, two evacuation, and two surgical. For the most part, general hospitals were located in the larger cities and station and field hospitals close to training and operational centers. General hospitals were large fixed installations that provided comprehensive care for severe cases from throughout a theater; station hospitals were intended to serve a single post; and field hospitals normally were mobile and accompanied the troops, although in the Southwest Pacific Area they often served fixed cantonments instead. Drawing their professional staffs from medical schools of major universities in the United States, the general hospitals contained considerable talent. The 4th at Melbourne was staffed by Western Reserve; the 118th at Sydney by Johns Hopkins; the 42d at Brisbane by the University of Maryland; and the 105th at Gatton, 40 miles west of Brisbane, by Harvard.

In early 1943 Carroll was able to embark on a major construction program that entailed an increase of 3,500 beds in Sydney and Brisbane, with 2,500 more planned for the future. In July of that year, with the war moving toward Queensland, the Australian War Cabinet approved the construction of an additional 22,000 beds—9,000 for New Guinea and 13,000 for Queensland. All of the hospitals followed a standard Army design featuring the lightest possible frame construction, with exteriors usually of heavy treated paper or fiber board, plumbing in separate lavatory buildings, and stoves rather than a central heating plant for each unit. They were well suited to conditions in Australia, where the climate ranged from temperate in southern areas to tropical in the north.[41]

The development of mobile hospitals was the theater's chief innovation. Carroll and his staff worked on three types: a 100-bed mobile unit mounted on trucks, a prefabricated demountable facility, and a 25-bed portable hospital. The first—oxymoronically termed a mobile station hospital—was created to support the Army during a retreat into the Australian interior, if a Japanese invasion took place; in the island campaigns that actually followed, the hospital proved of little value, on account of the lack of roads. The other two, however, greatly improved the mobility of medical treatment and unquestionably saved many lives.[42]

The chief surgeon's office ordered from Australian manufacturers hospital buildings prefabricated of plywood, masonite, or fibrolite that could be transported by aircraft. Medical personnel, assisted by engineers, actively engaged in the construction and disassembly of their own hospitals. (As a result, in late 1943 Carroll suggested to the surgeon general, Brig. Gen. Norman T. Kirk, that medical units dis-

[40]CSurg, USASOS, SWPA, Semimonthly Rpt, 27 Jun 42, THU Note Cards, Historians files, HUMEDS, RG 112, NARA.

[41]CSurg, SWPA, Annual Rpt, 1942, pp. 9–12, file 319.1–2; Interv, Lazzari, 5 Jul 45, file 000.71; Encl 4 to Rpt, OofCSurg, USASOS, SWPA, to SG, U.S. Army, 12 Jan 43, sub: Extracts From Report of the Chief Surgeon, S.O.S., Australia, December 15, 1942, file 319 (Medical Service—1942). All in HUMEDS, RG 112, NARA.

[42]Encl 4 to CSurg, USASOS, SWPA, Semimonthly Rpt, 15 Dec 42, file 319.1–2 (Medical Service in Australia), THU Note Cards, Historians files, HUMEDS, RG 112, NARA.



MAIN WARD OF A PREFABRICATED STATION HOSPITAL

patched to forward areas include in their organization one well-qualified plumber, one electrician, and at least two carpenters.) The hospitals consisted wholly of portable huts; floors were usually of concrete, roofing and wall-sheeting of corrugated iron or asbestos cement. The units came with tools and instructions for assembly. One type of building, with an air cooling system and plumbing, might function either as a surgical facility, a clinic, or a laboratory; another, less elaborate, housed wards, storage houses, and offices. Factories in Sydney were producing American-designed prefabricated units by the end of 1942. American-manufactured units did not arrive until late 1943.[43]

Carroll's third and most creative attempt to find a mobile facility suitable for the theater's vast distances, small troop concentrations, abundant jungles, and shortages of medics was the 25-bed portable hospital. As early as June 1942 work was under way in the chief sur-

[43]CSurg, SWPA, Annual Rpt, 1942, p. 13, and CSurg, USASOS, SWPA, Annual Rpt, 1943, pp. 15, 30–31, 72–76, file 319.1–2, HUMEDS, RG 112, NARA. Carroll also suggested that medical units dispatched to forward areas include in their organizational equipment the following items: hammers, saws, nails, corrugated iron roofing, concrete for floors, screening, pipe and pipe fittings, and portable power saws, if available.

geon's office to use these hospitals at isolated camps and, if needed, on the islands. For these units the chief surgeon anticipated allowing no conveyance at all, except sturdy wheeled litters to double as a sort of wheelbarrow on which the staff could push whatever equipment they could not carry. The portables would have no female nurses, and Carroll, while asking the surgeon general for male nurses, began to train enlisted men as practical nurses for use wherever women could not go. As yet, the chief surgeon had no idea of using the portables as surgical hospitals; he saw them as very small station hospitals, for use in supporting small units in remote locations.

During the summer, as preparations began for a counterattack against the Japanese, the portable took more definite form. Now it became a surgical hospital, intended to accompany invasion forces, to work on the beaches, and later to move forward with the troops, providing emergency lifesaving treatment to frontline casualties and stabilizing their condition for the long trip to the rear. Carroll scavenged from existing hospitals in Australia, forcing each to give up personnel and equipment equal to 10 percent of its bed strength. Thus a 250-bed station hospital became the parent organization of one portable, a 1,000-bed general hospital of four, and so on. By early October the chief surgeon's office had twenty-seven of the units assembled and ready to go. In time, portable hospitals proved ideally suited to the combat team organization and jungle fighting of the Pacific war; they served the fighting men well, and in some respects, foreshadowed the postwar organization of the MASH. But they were not always effectively used or wanted. As soon as the units were sent forward, they passed out of USASOS control, and often were improperly placed and used by field commanders and their surgeons. In the end, however, the portables emerged as a triumph of improvisation in a war where field expedients were the norm.[44]

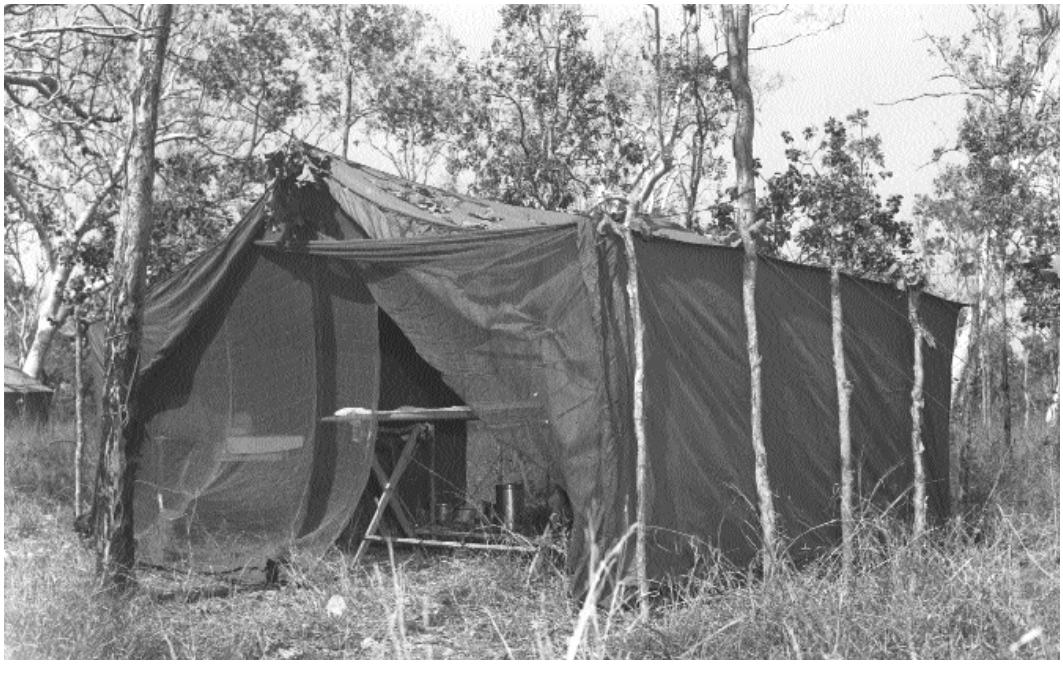


PORTABLE HOSPITAL ON THE MOVE

[44]CSurg, SWPA, Annual Rpt, 1942, pp. 17–18, file 319.1–2; OofCSurg, USASOS, SWPA, Diary, 7, 10, 18, 23 Sep 42, file 314.81 Daily Diary, 1 Aug 42–2 Jan 43; CSurg, USASOS, SWPA, Semimonthly Rpts, 27 Jun 42, and Encl 4, 15 Dec 42, and Info Memo, OofCSurg, USASOS, SWPA (copy to Base Sec 3 Hosps), THU Note Cards, Historians files. All in HUMEDS, RG 112, NARA. See also Interv, Condon-Rall with Carroll, 26 Sep 80, CMH. In the European theater mobile surgical teams also assisted field hospital platoons. They, too, were another World War II source for the MASH; however, precursors can be traced back to World War I. See Albert E. Cowdrey, "MASH vs M*A*S*H: The Mobile Army Surgical Hospital," *Medical Heritage* 1 (Jan–Feb 85): 4–11.



Portable Hospital Bivouac Area and Surgical Tent



In building an evacuation system, the chief surgeon also showed an innovative spirit. Air evacuation was an evident need under Australian conditions and still more so when serious fighting began again in New Guinea. Carroll warned: "We are in a modern War and should adopt modern methods to meet the needs." His preference was for strict adherence to the letter of the Hague and Geneva Conventions, not out of legalism but to protect the wounded. He wanted dedicated air ambulances, painted white and marked with the red cross. But convenience dictated instead that the same planes that flew supplies to forward outposts should also bring casualties on return flights. Six air ambulances that arrived from the United States in response to Carroll's pleas were stripped of their litter brackets and converted into transports, General MacArthur ruling that "it is not desired to mark, equip and set aside my air transports for exclusive use in the evacuation of sick and wounded at this time."[45]

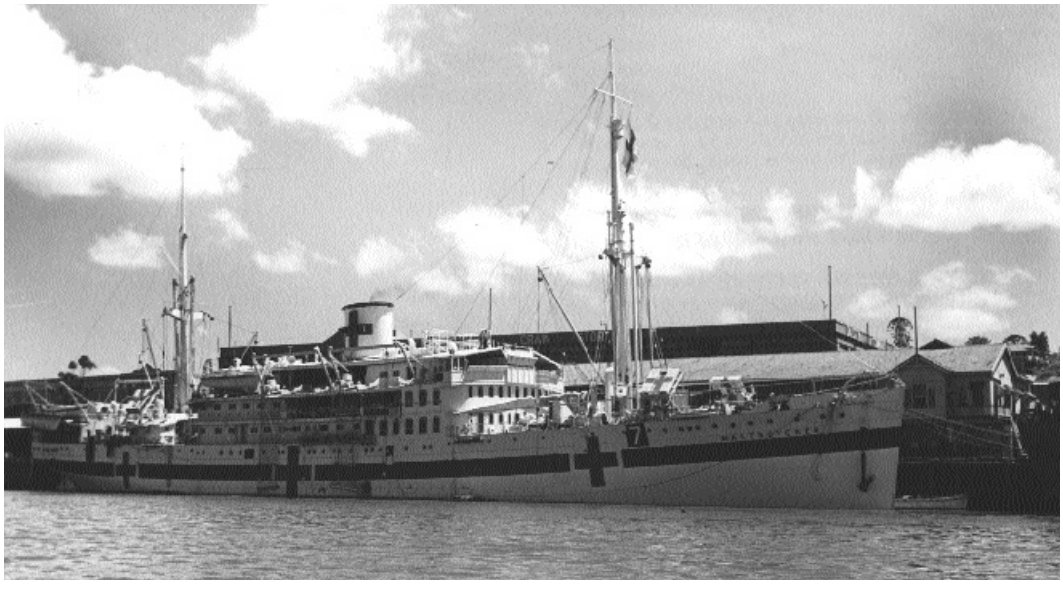
Carroll also hoped for hospital ships, properly painted and marked as the *Mactan* had been, to carry evacuees to the United States. He pointed to the action of the Japanese in notifying the United States that they planned to put ten such ships into service; he argued that the enemy intended to use, and thus would be compelled to respect, the protection of the international accords that Japan had signed but not ratified. On the other hand, casualties carried on unmarked ships or planes would be entirely helpless in the event of an attack by plane or submarine, and would probably lose their lives. But worldwide shipping shortages prevented conversion of transports to hospital ships. Later the chief surgeon solved his problem by obtaining hospital ships from the Australians for use in the immediate area, and by converting the Dutch liners *Tasman* and *Maetsuycker* into hospital transports for interbase service only.[46]

To speed land evacuation, the chief surgeon borrowed Australian ambulance trains. A train could operate only in the states with the proper gauge tracks. Trains built to 3´6˝ gauge could, for example, cross from the Northern Territory into Queensland, but at the border of New South Wales casualties had to be reloaded onto another train. Despite these problems, by the end of 1942 six trains were in service, each capable of carrying from 48- to 354-stretcher patients and served by two or three nurses and a variable complement of corpsmen.

By this time the Japanese threat to the trackage, exposed at many points along the coastline, had diminished greatly. Fighting raged in the Solomon Islands and New Guinea to the north, and in consequence a definite pattern of evacuation had taken shape. Each base section maintained a careful record of beds available and in use in its own hospitals, and the base section surgeon was respon-

[45]First quotation from Check Sheet, CSurg, SWPA, to G–4, SWPA, 10 Oct 42, sub: Airplane Ambulance; second quotation from Ltr, Col B. M. Fitch, AG, for CinC, SWPA, to Cdr, Allied Air Forces, 4 Nov 42, sub: Air Ambulances. Both THU Note Cards, Historians files, HUMEDS, RG 112, NARA. The story of air ambulances can be followed in detail in file 451.8 Air-Sea Ambulances, SWPA, Mar 42–Feb 43, HUMEDS, RG 112, NARA.

[46]CSurg, USASOS, SWPA, Semimonthly Rpt, 29 Aug 42, pp. 1–2, THU Note Cards, Historians files; idem, Annual Rpt, 1943, p. 5, file 319.1–2. Both in HUMEDS, RG 112, NARA. See also Stanley L. Falk, "Army Hospital Ships in World War II," *Military Review* 45 (Sep 65): 85–91.



THE *MAETSUYCKER*

sible for evacuating his own command under theater guidelines. Less serious cases remained in the north, ideally, and more serious ones were sent south, with the worst injured ending their journeys in the large general hospitals, especially the 4th in Melbourne, whose 2,000 beds made it the biggest as well as the best equipped and staffed in Australia. Specialists were concentrated in the few large rear-area facilities, to make best use of their talents, while the evacuation of long-term cases kept beds empty and ready for use near the fighting zone. Patients facing a permanent disability or requiring very long-term care were sent from the 4th, 42d, 105th, and 118th General Hospitals to the United States as shipping became available.[47]

Evacuation policy in the theater grew from near-nonexistence in early 1942 to considerable complexity a year later. Transport problems in the different base sections varied so widely and methods of carrying casualties were so casual and so diverse that the Office of the Chief Surgeon initially had not established any general policy for evacuation from one to another. Base Section 1 evacuated solely by air; the northern part of Base Section 2 sent patients to Townsville by land-based aircraft or by seaplanes, or in the small hospital ships loaned by the Australians. Townsville hospitals sent casualties they could not hold to Base Section 3 by the same methods, or by hospital train. In the more populous southern Base Sections 4 and 7 a relatively good roadnet and railway system were available for use.

In February the chief surgeon's office adopted a six-month evacuation policy

[47]Encl 5 to CSurg, USASOS, SWPA, Semimonthly Rpt, 15 Dec 42, THU Note Cards, Historians files, HUMEDS, RG 112, NARA.

for Australia as a whole—that is to say, patients not expected to return to duty within 180 days were sent to the United States. Considering how few beds Carroll had available, the policy was practicable because the theater had so few American troops. But as troop strength grew, so did the hospital system, and though the continuing deficit in medical manpower made maintenance of the six-month standard difficult, the chief surgeon clung to it against the surgeon general's preference for 120 days in order to conserve the theater's fighting strength. For those who must be sent home, the absence of large hospital ships meant voyages on unmarked transports. Space on aircraft was at a premium, emergency cases and AAF personnel having priority.

By early 1943 the ad hoc evacuation policy had matured into a complicated hierarchy of policies, ranging from 3 days for field units in contact with the enemy, to 60 days for New Guinea and for Base Sections 1 and 2, to 120 days for Base Section 3. A single chain of evacuation now linked the entire theater, from the north coast of New Guinea to urban Melbourne and the rest camps of south Australia. Along the chain, a seriously ill or wounded soldier might travel nearly 2,000 miles from aid station to general hospital in Australia and, if his condition warranted, almost 8,000 more to home (*see Table 1*).[48]

[48]Rpts, CSurg, USASOS, SWPA, to CG, USASOS, SWPA, 12 Nov 42, sub: Evacuation of Sick and Wounded; idem to AG, [USASOS, SWPA], 6 Feb 43; and idem to Surg, USAFFE, 17 Mar 43, sub: Evacuation Policy. All in file 370.5 Air Evacuation Reports, SWPA, 1942, HUMEDS, RG 112, NARA. In World War II the chain of evacuation comprised five levels, or echelons: regiment, division, army, communications zone, and continental U.S. The war against Japan, however, saw several modifications to the official format described in the Army's *Mobile Units of the Medical Department, Field Manual 8–5* (1942). One was the invention of the portable surgical hospital, a unit that did not arrive in the European theater until around V–E day. Another was the general strengthening of the medical service in lower-echelon tactical units. Officially, a corps surgeon belonged to a purely tactical headquarters, but in the Pacific a corps operating separately acquired many of the logistical functions of a field army. Similarly, battalions and regiments operating separately as combat or landing teams might be provided with medical units and assigned duties usually associated with a higher headquarters.

Supply

All the problems and make-do accomplishments of the medical service in the Southwest Pacific theater were mirrored in the supply system. Like the theater at large, medical supply for American troops in Australia began with the unloading of the ships in the *Pensacola* convoy. The early chief surgeons secured space in a Brisbane warehouse and, for lack of personnel, put an AAF dental officer in charge. When the officer was transferred, a staff sergeant temporarily took over. Troops passing through Brisbane were issued whatever they needed, and items not available were provided by the Australian Army's Advanced Depot of Medical, Dental, and Veterinary Supplies. Throughout 1942 trained depot personnel were few and in heavy demand; for most of the year only the 3 officers and 42 enlisted men of the 4th Medical Supply Depot (later redesignated the 9th Medical Supply Depot) had to operate the depots in Sydney and Melbourne. On 1 December the 3d Medical Supply Depot reached Australia, and its 14 officers and 227 enlisted men were promptly subdivided, even individual platoons being split to provide small sections that worked in locations from Sydney to New Guinea.

TABLE 1—THE CHAIN OF EVACUATION, 1943–1945

Aidman

The aidman, although assigned to the battalion medical section, served with the line companies and gave first aid to the injured.

Aid Station

The battalion aid station, the first medical installation reached by a casualty because of its location near the front line, treated shock and provided minor surgery, dressing for wounds, and relief from pain. The battalion surgeon, aid station personnel, and company aidmen together formed one of the three battalion sections of the regimental medical detachment. A separate battalion, however, had its own medical detachment.

Collecting Company/Collecting Station

In World War II the division surgeon commanded the division's medical battalion. Each of the battalion's three collecting companies was designed to support one regiment or regimental combat team. A collecting company evacuated casualties from forward aid stations, and a collecting station, which the company ran, provided additional first aid, plus oxygen and whole blood, and formed a regimental holding unit for casualties until they could be taken to the rear. Sometimes a collecting station and a portable surgical hospital worked together, with the hospital stabilizing the seriously wounded for evacuation.

Clearing Company/Clearing Station

Also part of the medical battalion was the clearing company. The clearing station that it operated was, in effect, a small forward hospital, providing fairly complex treatment and informed prognosis, on which further disposition of the casualty was based. In the Pacific clearing companies often functioned as small field hospitals, because most battles were small and hospital units might be absent from the task force or remote from the fighting line. Here again, a portable surgical hospital might work nearby.

Portable Surgical Hospital

With a capacity of 25 beds, this small unit was developed in Australia and later adapted to provide skilled surgical care in jungle fighting during the Papuan campaign. Still later, it was attached to task forces to provide early frontline surgical care in amphibious operations. In theory, hospital equipment and supplies were to be carried on the backs of the thirty-three soldiers and four officers who formed the unit. The portable might be attached to a regiment, a division, or an army, depending on circumstances.

Field Hospital

Attached to a division or corps, the 380-bed (later 400-bed) field hospital was intended to be highly mobile and to concentrate on the early care of casualties.

TABLE 1—THE CHAIN OF EVACUATION, 1943–1945 (CONTINUED)

Field Hospital (Continued)

Located whenever possible within a few miles of the front line, the field hospital was a highly flexible unit that could be broken down into its component platoons, each of which, if strengthened with surgical teams, might operate as an independent small hospital.

Medical Group

A headquarters that organized field army medical units—separate medical battalions and field hospitals, in the main—for operational and administrative purposes, a medical group controlled evacuation to the rear of the divisions and all evacuation of nondivisional units serving under a field army.

Evacuation Hospital (Semimobile)

Larger and more difficult to move than the field hospital, and intended to care for 250–400 casualties (though some held up to 2,000 when fighting was heavy and/or evacuation failed), this unit primarily was utilized for the care of the seriously injured or ill designated for evacuation to large hospitals in the rear. There was also a 750-bed hospital, but it was not semimobile.

Station Hospital

A fixed hospital of 25–900 beds, corresponding to a post hospital in the United States, provided highly skilled care in medicine and surgery both to casualties evacuated from the combat zone and to garrison troops stationed in its vicinity. The great variation in size reflected the fact that a station hospital might serve anything from a small islet to a major base.

General Hospital

The last stop in the chain of evacuation, this large fixed installation of 500–1,000 beds provided the best available care and specialized treatment for all types and classes of casualties. The general hospital was authorized to evacuate patients to the United States for additional care or discharge.

Hospital Center

Indefinitely expandable, the hospital center was a collection of general hospitals operating under a single headquarters. Component hospitals normally specialized in the care of one or more types of disease or injury.

Convalescent Hospital

This unit was either a station or general hospital devoted to preparing for duty soldiers who had recovered from illness or wounds but were unready to resume full duty status. Those who reached a convalescent hospital were already on their way back to a line or support unit; normally, their next stop would be a replacement depot, outside the medical system.

Meanwhile, the United States—especially the medical depot at Fort Mason, California, from which Carroll received most of his supplies—struggled to provide for its forces in Australia over a distance equal to more than one-quarter the circumference of the Earth. In quality the materiel that arrived was excellent, almost without exception, but quantity was another matter. Shortages developed early in surgical and dental instruments, hospital equipment, and biologicals, which the chief surgeon attempted to make up through local procurement in Australia. Here, however, he confronted myriad realities: small population, nascent industries, heavy commitment to the war effort, and long history of colonial dependence on imports. Less than 2 percent of the drugs listed in the *United States Pharmacopeia* could be manufactured from raw materials produced in Australia, and the standards of the *British Pharmacopoeia* governed those that were. A few types of surgical instruments were in limited production by the year's end, but manufacture of heavier hospital gear—mess and laundry equipment, for example—was impeded by manpower shortages that filled the workforce with untrained adolescents and by the almost complete diversion of heavy industry to munitions. The USASOS obtained enough from local sources to cover its shortfalls, but time lags of three months or more between order and delivery were common. As Carroll made plain, he preferred American goods. He hoped to be able to depend upon them entirely and repeatedly argued that medical supplies, most of which were small in bulk and weight, imposed comparatively little burden on the long supply line from the United States.[49]

As the year advanced, the supply system developed rapidly. Carroll's office worked to educate its American suppliers in the special requirements of the theater—lightness in weight, portability, packaging that protected against moisture, unbreakable containers to facilitate airdrops, and elimination of all heavy medical chests. Carroll recommended using small, mobile water purification outfits and pointed out that each hospital assembly needed its own electricity and steam generating plants, plus the necessary pipes and fixtures. To render each hospital independent of the local water supply became a theater goal. The chief surgeon preferred plastic utensils to metal and glass, whenever possible. Allowances of equipment had to be changed, he argued, on account of the need to break hospitals up into smaller units. Generators, X-ray machines, and microscopes, among other things, had to be duplicated in each of the smaller hospital units.

Distribution followed a like course. At first, medical depots were set up only in Melbourne and Brisbane, where supplies were received. But by the end of 1942 the original installations had become reserve as well as issuing depots and a system of branch depots had developed in all base sections, including the Advance Base at Port Moresby on Papua. Each depot was

[49]Encl 2 to CSurg, USASOS, SWPA, Semimonthly Rpt, 15 Dec 42, and Ltr, Col P. J. Carroll, CSurg, USASOS, SWPA, to Col. C. D. Buck, Med Supply Off, Fort Mason, Calif., 29 Aug 42, THU Note Cards, Historians files. See also CSurg, SWPA, Annual Rpt, 1942, p. 15, file 319.1–2, and OofSurg, Base Sec 3, Historical Rpt, n.d., sub: Diary of Medical Installations of Base Section 3, USASOS, SWPA, pp. 7–8, file 314.81, War Diary, 1 Jul 42–30 Jun 43. All in HUMEDS, RG 112, NARA.

controlled by its base section commander under the technical direction of the chief surgeon. Automatic resupply items were distributed to the branch depots without requisition on a troop strength basis. The theater aimed to keep a sixty-day supply on hand everywhere except New Guinea, where the unpredictable demands of combat required a ninety-day supply. As will be seen, the improvised system there achieved remarkable success in the face of heavy odds.[50]

In its hard-pressed first year, the medical service in the Southwest Pacific Area exhibited both a talent for innovation and a susceptibility to long-term organizational problems. Throughout many changes, some common aims were apparent: to break up large units into self-contained small ones; to reduce equipment to a necessary minimum; to concentrate fixed beds while making direct-support hospitals as mobile as possible; and, above all, to make the most of slender resources that must be spread over great distances. Since Carroll bore much criticism for the failings of the medical service, he deserves also to be recognized for adopting policies in hospitalization and evacuation that were fundamentally correct and for developing many useful innovations, notably the portable hospital.

If expedients were the hallmark of the period, surely the basic reason was that the southern Pacific theaters had no time for leisurely preparation. The Allies were compelled simultaneously to create bases, train forces, and engage the advancing enemy. Indeed, American forces in the Navy-run South Pacific theater were struggling to meet a timetable that was even more demanding.

[50]OofSurg, Base Sec 3, Historical Rpt, n.d., p. 15, file 314.81, War Diary, 1 Jul 42–30 Jun 43; Encl 2 to CSurg, USASOS, SWPA, Semimonthly Rpt, 15 Dec 42, THU Note Cards, Historians files. Both in HUMEDS, RG 112, NARA.

CHAPTER III

Army Medicine in Navy Theaters

For six months following the Pearl Harbor attack, the Hawaiian Islands were on the defensive, awaiting another Japanese assault. Rumors of sabotage and enemy landings spread fear and unrest. While Army engineers camouflaged vital installations with paint and nets, defense forces braced themselves for renewed attack.

On 17 December 1941 two new commanders, Admiral Nimitz and Lt. Gen. Delos C. Emmons, replaced those disgraced by the success of the Japanese raid. Determined to avoid the confusion over command that had preceded Pearl Harbor, President Roosevelt compelled the creation of unified commands in vulnerable areas—under the Army in the Panama Canal Zone and under the Navy in Hawaii. On the thirty-first Nimitz became Commander-in-Chief, Pacific (CINCPAC), in charge of the Pacific Fleet and, in the spring of 1942, of the Pacific Ocean Areas (CINCPOA). As commander of the subordinate Hawaiian Department, Emmons provided for the land defenses of Hawaii and the nearby islands. Under martial law, he also served as military governor of the territory.[1]

Although the fear of invasion and air raids never completely left Hawaii, the American naval victory at the Battle of Midway in June 1942 greatly diminished the Japanese threat. As American planners began to think of shifting from defense to offense, the islands where the war had begun emerged, first as a supply base for the active theaters of the southern Pacific and then as a springboard for operations in the central Pacific.

Life there was transformed. Already, martial law had been instituted, partly to ensure the speedy enforcement of military orders and partly to control the large minority of ethnic Japanese. The national government poured in air, ground, and naval units, constructing new installations as it repaired and expanded old ones. Hundreds of thousands of war workers followed. Buildings and land were taken over by the armed forces, barracks were erected with great speed, and depots were filled with vast accumulations of war materiel. On some plantations school children worked in the canefields, replacing absent men, while on others barbed-wire fences went up to protect new cantonments. Tanks

[1]Louis Morton, *Strategy and Command: The First Two Years*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1962), pp. 144–45, 232. On the military government, see Gwenfread E. Allen, *Hawaii's War Years, 1941–1945* (Honolulu: University of Hawaii Press, 1950), pp. 166–83.

and guns rumbled at all hours through the streets of Honolulu.

The Hawaiian Base

To protect soldiers and civilians from disease, to expand the Army hospital system, and to prepare for future offensives—these were the tasks of Colonel King, the efficient chief surgeon of the Hawaiian Department who had directed the prewar preparations and the medical response to Pearl Harbor. A meticulous manager, determined to master and control as far as possible all the activities of his office, King was ultimately obliged to loosen his grip on day-to-day business as the complexity of the work increased. His basic approach was to assume that the enemy was capable of achieving the worst—a surprise attack, accompanied by a blockade of the islands—and to attempt to ready the medical service for it. "In preparation for war," he said later, "*take nothing for granted—see everything.*"[2]

Under him, the chief surgeon's office grew rapidly to meet the needs of the expanding Army and the military government. At the time of the attack on Pearl Harbor King's staff was small, consisting of nine officers, eight enlisted men, and fifteen civilians, divided into a rear and a forward echelon. The rear echelon, including the bulk of the administrative section, was located in the offices of Farrington High School on Oahu; administration and supply were apparently its main concerns. The forward echelon, which was responsible for operations and training, was situated in the Aliamanu Crater together with the commanding general and his staff. Three consultants were also on the staff of King's office, but they were assigned to hospitals on Oahu.[3]

In March 1942 service commands were set up on the other islands of the Hawaiian archipelago, and a surgeon was appointed to each. Typical was the Hawaii Service Command on the largest island, Hawaii. The command surgeon, Lt. Col. William A. D. Woolgar, MC, and his staff provided medical and dental care for nondivisional units, hospitalization for the 27th Infantry Division, and management for the hospital construction then under way. His area of control grew steadily during 1942, as he organized the local hospitals and served as liaison between them and King. Ultimately, when the 27th Division left Hawaii, he took responsibility for the care of the tactical forces that remained.[4]

In October a centralized services of supply organization came to the Hawaiian Islands. King was named surgeon of the new command, without relinquishing his duties as chief surgeon and as medical adviser to the military governor. During December the number of officers assigned to his staff doubled. By that time King himself was

[2]Quotation from Memo, Col Edgar King to Ed., History of the Medical Department, U.S. Army in World War II, 22 Mar 50, sub: Supplemental Data on the Work of the Medical Department in the Hawaiian Department, Later U.S. Army Forces in the Pacific, then the Central Pacific Area, p. 7, file 000.71. See also Buell Whitehill, "Administrative History of Medical Activities in the Middle Pacific," block 3, pp. 13, 22–23, file 314.7. Both in Historical Unit Medical Detachment (HUMEDS), Record Group (RG) 112, National Archives and Records Administration (NARA), Washington, D.C.

[3]Whitehill, "Medical Activities in Middle Pacific," block 3, pp. 1–2, file 314.7, HUMEDS, RG 112, NARA.

[4]Surg, Haw Svc Cmd, Annual Rpt, 1942, p. 1, in CSurg, Haw Dept, Annual Rpt, 1942, sec. 3, file 319.1–2, HUMEDS, RG 112, NARA.

already a brigadier general, having been promoted on 25 October, in recognition of the many hats he wore and the rapid growth of the area.[5]

The special circumstances of Hawaii—its geography and closeness to the front lines, its large population of Japanese descent, and its critical function as the rear base for all Pacific operations—tended to centralize unprecedented authority in King's hands. Civil-military relations remained especially important. In case of renewed enemy attack, the Army Medical Department would again be responsible for the care of civilian casualties, while civilian doctors would once more play an essential role in the care of wounded servicemen. Hence, King assigned a member of his staff to handle civil affairs liaison, and plans were laid, in case of need, to place control of all hospitals, civilian and military alike, under the chief surgeon's office; to set up first aid stations throughout Oahu; and to provide civilian care for military casualties wherever the military facilities were insufficient. In essence, King's civil affairs officer served as the point of contact between the chief surgeon's office and the Honolulu Medical Society, which had already provided so much valuable aid at the time of Pearl Harbor.

Japanese residents of Hawaii—comprising about one-third of the population, some of whom were aliens but many American citizens—formed a special concern. King employed a Japanese maid, ignoring rumors that she planned to poison him. He listened with some skepticism to old Hawaii hands, who held emphatic but contradictory views on the ethnic Japanese, some terming them completely loyal while others thought them entirely disloyal. "As is always the case," he remarked later, "the truth lay somewhere between, but where?" Among the Japanese were many doctors, dentists, nurses, and medical technicians; their services were "desperately needed" and hard to refuse. Many volunteered to aid the war effort, either in or out of uniform, and those who were citizens "claimed the *right* to serve." King was not without a touch of cynicism, asking, "What would have been the attitude of these people as a whole had the Battle of Midway been lost by us?" But neither was he prepared to exclude from all service skilled people who might be as loyal as they claimed. For the few whose loyalty seemed capable of proof, he recommended full acceptance in positions of trust; for the many who could not positively be shown to be disloyal, he found positions for them chiefly in civilian service among their own people, where they had "no access to vital spots." After the war, he was to pay tribute to the Japanese Americans who "served gallantly and gave much. To them my highest respect."[6]

As ever in wartime, venereal disease (VD) control was an important aspect of civil-military relations. King's position gave him unusual opportunities to control such diseases through both military and civilian channels. Until 1942

[5]Blanche B. Armfield, *Organization and Administration in World War II* (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963), p. 381.

[6]Quotations from Memo, King to Ed., History of Medical Department, 22 Mar 50, pp. 4–5, file 000.71, HUMEDS, RG 112, NARA. See also Armfield, *Organization and Administration*, pp. 376–77, and Whitehill, "Medical Activities in Middle Pacific," block 3, p. 5, file 314.7, HUMEDS, RG 112, NARA.

the Hawaiian Department pursued its customary course in dealing with soldiers—lecturing, giving monthly physical inspections, and reporting contacts to the military police. The situation in the islands was unusual for an American territory in that prostitution was tolerated; brothels employed physicians, often very able ones, to check their inmates. The business was lucrative for both the doctors and the often wealthy and influential owners of the houses.[7]

In May, however, General Emmons, as military governor, directed the Territorial Board of Health to implement a VD control program throughout the islands. Both military and civilian doctors were ordered to report every case within twenty-four hours of diagnosis. Infected civilians were closely monitored until certified as noninfectious. King reported that the board of health was energetic in its follow-ups, resulting in a large number of infected men and women being placed under treatment. Military and civilian police gathered up streetwalkers for compulsory examination. Propaganda intensified; prophylactic stations were opened in Honolulu and run day and night. The results of rigorous centralized control were evident by the year's end. At a time when tens of thousands of troops and thousands of construction workers were arriving in the traditionally easygoing islands, the VD rate for the command dropped from 14 per 1,000 troops per year in 1941 to 9.6 in 1942—"the lowest rate ever reached in this Department," King reported.[8]

Official fears of biological or chemical warfare intensified sanitary inspections of military posts, civilian food processing plants, and water supply sources. A false report of water poisoning at Hickam Field on 7 December 1941 coincided with King's appointment as adviser to the commanding general on all matters relating to the contamination of food and drink. For all Hawaiians, rigorous and thorough preventive medicine was the result. All residents of the islands over six months old were immunized against smallpox, typhoid, and paratyphoid; all poisons were impounded, and their sale was strictly controlled; guards were posted at water supply sources, which underwent daily testing; and fresh milk was prohibited in Army messes.

In October 1942 Emmons appointed King to the position of anti-biological warfare officer, in addition to his other duties. Now he combined the earlier initiatives against sabotage by germs or poison into a comprehensive program that included sending Army agents into civilian food processing and bottling plants. District anti-biological warfare officers were appointed on islands other than Oahu. Soldiers watched the mixing of ingredients in Coca-Cola bottling plants; employees were checked by Army intelligence; and civilian laboratories had to register and receive military clearance

[7]Thomas H. Sternberg et al., "Venereal Diseases," in Ebbe Curtis Hoff, ed., *Communicable Diseases Transmitted Through Contact or by Unknown Means*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1960), pp. 282–83.

[8]Ibid., p. 285; CSurg, Haw Dept, Annual Rpt, 1942, sec. 1, p. 7 (quotation) and encl. 1, file 319.1–2, HUMEDS, RG 112, NARA. The system described here endured until 1944, when the brothels were at last closed down. Despite some fears of rape and uncontrolled streetwalking, the VD rate then dropped still lower, apparently because the added cost and bother of finding sex partners reduced the total number of contacts.

of their work. As might be expected, the Veterinary Corps played a considerable part in these efforts, since its primary work, other than the care of Army horses and war dogs, was in the field of meat and dairy hygiene. The tensions that might have resulted from excessive military control were mitigated by the Hawaiian Department's tradition of working closely with civilians. Veterinary officers cooperated with the Territorial Board of Health, as well as with King's medical inspector and with the Army's chemical warfare officer, whose service controlled the nation's biological warfare program.[9]

In retrospect, much of this effort was needless. The fear of Japanese biological warfare in Hawaii proved to be groundless, though Japan did make and use such weapons in China. Full military control lasted only through the period of the most acute emergency. In February 1943 the military yielded much of its authority to the Office of Civilian Defense and to the normal civilian public health agencies. In August the Hawaiian Department was replaced by a new headquarters, the United States Army Forces in the Central Pacific Area (USAFICPA), and King's duties became primarily those of medical planning for Nimitz' coming offensives.

By the fall of 1943 the Hawaiian Islands had become the medical hub of the Pacific. Vastly increased numbers of troops and construction workers had been accommodated and cared for. Though understandably resented by many civilians, military control had distinct advantages in the field of public health during wartime. Throughout the period of the emergency, military responsibility for soldiers and civilians alike had been concentrated in the hands of one able physician. As a historian of the war years later pointed out, "Hawaii emerged from the war with a healthier population despite the health hazards" of the time.[10]

Hospitalization

Hospitalization was the major medical function of King's office. The need for hospital beds increased proportionately with the influx of sick and wounded evacuees from the Pacific fighting and with the buildup of troops for the coming offensives. The chief surgeon not only expanded Army hospitals on Oahu, where prewar hospitalization had been concentrated, but also extended construction to the rest of the Hawaiian Islands and to such southern outposts as Christmas, Canton, Baker, and Fanning Islands. Expansion took varied forms. Existing facilities were enlarged; new units introduced; and, to a limited extent, civilian hospitals preempted on a provisional basis. Change came in two waves: The first followed Pearl Harbor, while the second occurred during 1943, in anticipation of casualties from the offensives that lay ahead.

At the time of the Japanese attack, Tripler was the only general hospital in the islands, and it remained throughout the war the principal one and the largest. Located in the city of Honolulu, Tripler grew rapidly, as its commander, Colonel Miller, supervised the erection of new buildings on the grounds, the acquisition of adjacent Army structures,

[9]Whitehill, "Medical Activities in Middle Pacific," block 3, pp. 1–4, 11–13, file 314.7, HUMEDS, RG 112, NARA. See also Armfield, *Organization and Administration*, p. 376.

[10]Allen, *Hawaii's War Years,* p. 336.

and the purchase of additional sites. The enlarged establishment covered five large and four small areas. One area mainly housed hospital staff, while others specialized in surgery, medicine, contagious diseases, and convalescent care. Together, they formed a major medical center, the final destination of patients evacuated from station hospitals on the outer islands of the Hawaiian group and from those on the islands to the south.

Tripler also served as a station hospital for the area on Oahu between Pearl Harbor, the mountains, and the Nuuanu Valley to the east of the harbor—a region so crowded with military establishments by the end of 1943 as to constitute "one great fort." It provided outpatient services for military personnel and their dependents, as well as for civilian workers hired by the Corps of Engineers. As consultants, specialists at Tripler made their skills available to field medical officers; they also helped to teach classes for the hospital's own staff, for doctors whose skills were rusty after long forward service with combat units, and for others newly assigned from the mainland to duty in the Pacific. Finally, in 1943 the School of Aviation Medicine was established at Tripler to train young and physically fit physicians as flight surgeons.[11]

One of the world's great military hospitals, the Tripler complex differed from civilian institutions of equivalent scope in its lack of connection with a medical school and its lack of a research function. Yet new and veteran Army doctors benefited from the "astonishing wealth of clinical material" that filled its wards. Even as a station hospital providing treatment to local people, Tripler received not only the common diseases of any American community but also the "hopelessly severe crushing and mangling" injuries that resulted from accidents at the numerous construction sites. Casualties flown in from the tropical battlefronts suffered from an array of exotic diseases; others, from the Aleutians, had to be treated for severe cold injury. Battle wounds and training injuries gave staff and trainees alike broad experience with the consequences of gunfire. New soldiers shipped hastily to the Pacific arrived with many problems from civilian life, including psychological difficulties intensified by absence from home, the stress of training, and the dangers of war. On crowded Oahu living space was at a premium, and victims of communicable diseases often went to hospitals merely to protect their housemates—as did hundreds of cases of pulmonary tuberculosis, whose isolation at home was no longer feasible. "It is thought improbable," wrote the commander, almost visibly rubbing his hands, "that any year in the history of Tripler General Hospital has brought with it such diversified pathology and such splendid clinical opportunities [as 1943]."[12]

During 1942–43 four new general hospitals joined Tripler at the apex of Army medicine in the Pacific. Schofield Station Hospital at Schofield Barracks, already the second largest in the Hawaiian Department, reorganized and expanded in March 1942 as a general hospital. Though authorized a bed capacity of only 1,000, the newly christened North

[11]Tripler Gen Hosp Annual Rpts, 1942, pp. 5–6, and 1943, p. 1 (quotation), file 319.1–2, HUMEDS, RG 112, NARA. Tripler admitted about 7,400 casualties in 1941, 8,700 in 1942, and 11,000 in 1943.

[12]Ibid., 1943, pp. 14–15, file 319.1–2, HUMEDS, RG 112, NARA.

Sector General Hospital grew to 1,800 by the end of the year, accommodating extra patients on enclosed porches. The 204th General Hospital had a varied history. After arriving in April, its staff trained at Tripler and North Sector, then split into small detachments to operate provisional hospitals and to form provisional clearing companies and ambulance battalions; finally, in November 1943 the 204th was reunited at Waipio on Oahu and began to receive an influx of casualties from the Pacific fighting. The 147th General Hospital, on its arrival from the zone of interior in June 1942, took over Provisional General Hospital No. 2 at St. Louis College, about 5 miles east of downtown Honolulu. Here the 147th served the south sector of Oahu and, like other general hospitals, the outlying islands of the Hawaiian Department. Housed in permanent concrete buildings belonging to the college and temporary wooden structures built by the Army, its normal bed capacity of 938 could easily expand to 1,500. The hospital was equipped to handle all kinds of patients, except those with contagious or mental diseases, who were transferred to Tripler.[13]

The last general hospital to see service in Hawaii was the 148th, which arrived on Oahu one month before the 147th. However, its staff soon scattered to meet pressing needs. Small detachments were sent to the island of Kauai to operate 50-bed hospitals, while some nurses and enlisted men were borrowed by the 147th and North Sector General Hospitals. The remaining staff members operated a station and a general hospital on the island of Hawaii until August 1943, when they moved to Oahu, serving first at Schofield Barracks and then in October in new quarters at Ekahanui Gulf, 5 miles distant. Once on Oahu the 148th General Hospital, in addition to its normal duties, trained officers, nurses, and enlisted men for medical service with the combat forces.[14]

Bustling Oahu also contained ten other hospitals, station or field. With the exception of the small station hospital at Hickam Field, all arrived during the last two months of 1943; personnel, after training at one of the two large hospitals, moved out to their duty stations. Additionally, small medical stations known as Army annexes, with bed capacities of less than 100, served Army forces stationed on the other islands of the Hawaiian group. Hawaii, Kauai, and Maui boasted the larger hospitals; Molokai and Lanai contained the Army annexes. Though Army divisions stationed on the islands had their own medical units, the island hospitals, under the jurisdiction of the surgeon of the island service command, cared for their seriously ill patients. The smaller hospitals evacuated their more difficult cases by Army transport planes or by interisland boats to the general hospitals on Oahu.[15]

[13]North Sector Gen Hosp Annual Rpt, 1942, pp. 1–3; 204th Gen Hosp Annual Rpt, 1942, pp. 1–5, in CSurg, Haw Dept, Annual Rpt, 1942, sec. 2; ibid., 1943, pp. 1–3, in CSurg, USAFICPA, Annual Rpt, 1943, sec. 3; 147th Gen Hosp Annual Rpt, 1942, pp. 2–3. All file 319.1–2, HUMEDS, RG 112, NARA. See also A. Edward Livingston, "History of the Medical Service, 147th General Hospital," pp. 1–7, file 314.7, HUMEDS, RG 112, NARA.

[14]148th Gen Hosp Annual Rpt, 1942, pp. 1–12, in CSurg, Haw Dept, Annual Rpt, 1942, sec. 3; ibid., 1943, pp. 1–5, in CSurg, USAFICPA, Annual Rpt, 1943, sec. 3. Both file 319.1–2, HUMEDS, RG 112, NARA.

[15]See 22d, 156th, and 165th Sta Hosps Annual Rpts, 1943, in CSurg, USAFICPA, Annual Rpt, 1943, sec. 6. See also Surgs, Kauai, Hawaii, and Maui Svc Cmds; Surgs, Kauai, Maui, Waikapu, and Molokai-Lanai Dist Cmds; 156th, 165th, and Barking Sands Sector Sta Hosps; Army Annex, Shingle Memorial Hosp; and

Continued

Farther still from the center of activity were the outlying islands of the equatorial Pacific. After the Japanese attacked Pearl Harbor, hospital units accompanied task forces that occupied Christmas, Canton, Fanning, and Baker Islands, previously ungarrisoned, to build and defend air bases. Canton in the Phoenix Islands, below the equator, came to serve as a link in the air communications system in the Pacific, and the small hospital there became a staging facility for evacuees from South Pacific battlefields. In these remote dots on the map, medics set up hospitals in abandoned buildings, Quonset huts, and tents, and placed dispensaries in dugouts protected by coral coverings. Since the outlying islands were considered too primitive and isolated for female nurses, male hospital corpsmen took their places. Many served ably, doing complex tasks in the operating room without hope of advancement, since the Army Nurse Corps was limited to women.[16]

A report of the 1st Station Hospital on Christmas Island gave a glimpse of one such remote area. A 150-bed unit of 14 officers and 100 enlisted men, the hospital embarked on the SS *President Johnson* and sailed from San Francisco on 31 January 1942. Also on the ship was Task Force 4591—the 2,000-plus troops of the 102d Infantry with the mission of building and defending an air base. Besides the hospital, medical personnel for the force consisted of the regimental detachment, with 2 officers and 27 enlisted men, and a flight surgeon, with an 8-man detachment. On 10 February the force arrived at its destination, a large coral island typical of many in the central Pacific. As intelligence reports had predicted, the climate was good and the island devoid of endemic disease. A medical detachment sent out by the Hawaiian Department was already on the scene, caring for a small force of soldiers, American civilians, and Polynesian natives. The station hospital took over a temporary facility that the detachment had opened in a deserted building, pitching beside it a tent ward to handle bed patients. In a remarkably short time, a small but functional hospital was at work, with the usual array of departments—eye, ear, nose, and throat; dental; X-ray; laboratory; medicine and surgery; registrar and receiving officer—also under canvas. A 1.5-kilowatt generator provided power. So equipped, the medics awaited their patients, whether injured in the construction work or brought by planes in transit from the South Pacific fighting.[17]

Medical supply developed steadily, supporting hospital expansion. Before Pearl Harbor, hospitals, like other medical units in the Hawaiian Department, drew upon the medical supply depot at Fort Shafter on the grounds of Tripler General Hospital. Supplies were more than adequate, and overages built up in some items that proved useful later on. During 1942, in order to provide for the expanding Army and for security in case of another attack, King scattered subdepots throughout Oahu and the outlying

Army Annex, Lanai City Hosp, Annual Rpts, 1942, in CSurg, Haw Dept, Annual Rpt, 1942, sec. 3. Both file 319.1–2, HUMEDS, RG 112, NARA.

[16] 1st, 26th, and Task Force F Sta Hosps Annual Rpts, 1942, in CSurg, Haw Dept, Annual Rpt, 1942, sec. 3; ibid., 1943, in CSurg, USAFICPA, Annual Rpt, 1943, sec. 6. Both file 319.1–2, HUMEDS, RG 112, NARA.

[17] 1st Sta Hosp Annual Rpt, 1942, pp. 1–5, in CSurg, Haw Dept, 1942, sec. 3, file 319.1–2, HUMEDS, RG 112, NARA.

islands. By the end of the year Oahu alone had eleven and others were established on the islands of Maui, Kauai, and Hawaii. In July the 5th Medical Supply Depot took over the central depot. At the same time, a subdepot opened at Hickam Field for air force personnel only. Both the Army and its air forces maintained stocks of medical supplies, ranging from 90 to 180 days. At the end of the year the Hawaiian Department received an additional forty-five medical maintenance units, each designed to supply 10,000 men for thirty days, which were dispersed to depots throughout the islands to prevent excessive loss in the event of an attack. By that time shipping shortages that had become acute immediately after Pearl Harbor had been remedied, and a constantly increasing stream of supplies reached the islands.[18]

As the first Allied counteroffensive was getting under way in the southern Pacific, hospital expansion in Hawaii showed impressive gains. By the end of 1942 the Hawaiian Department counted nineteen hospitals in place of the three that had existed a year earlier. Seven of these were small, sometimes provisional, facilities operated by personnel from the larger establishments; in the Hawaiian Islands, as in Australia and the South Pacific, geography compelled the creation of small units to serve distant garrisons. But because the islands were comparatively few, bed strength could be concentrated far more effectively than in the fighting theaters, and almost 70 percent of the department's 7,780 beds remained on Oahu.

In other ways as well, the expansion produced a minimum of problems. The Hawaiian Islands, by contrast with the South and Southwest Pacific, were relatively close to the continental United States, making the importation of supplies and materials much easier. Hospital construction was given a high priority by Admiral Nimitz; Army engineers and sometimes Navy Seabees assisted medics with construction far more than in the other theaters, where doctors and hospital corpsmen often had to pitch in and build their own structures. Most important, no fighting raged in the area to hamper the growth of the Hawaiian base. General King, nevertheless, encountered several difficulties.

Personnel

As usual, wartime priorities ensured that a continuous personnel shortage, though not comparable to the one in Australia, would make the chief surgeon's task of staffing the expanded hospital facilities difficult. During 1942–43 officer strength was consistently 5 percent below that authorized. Nurses remained in short supply—15 percent understrength in 1942—but the deficiency was gradually reduced during 1943. Enlisted men filtered in, numbers rising from 27 percent below authorized strength in 1942 to only 4 percent below in 1943. Inevitably, the theater lacked sufficient physical therapists, dieticians, dentists, highly qualified surgeons, and trained psychiatrists—scarcities that existed almost everywhere during the war. In an effort to fill the vacancies in specialized fields, King transferred staff from one facility to another, split up newly arrived organizations in order to use their personnel as replacements,

[18]CSurg, Haw Dept, Annual Rpt, 1942, sec. 1, p. 11, file 319.1–2; Whitehill, "Medical Activities in Middle Pacific," block 3, p. 8, file 314.7. Both in HUMEDS, RG 112, NARA. See also Armfield, *Organization and Administration*, pp. 395–96, 399.

and detached individuals from one organization to fill shortages in another. He also recruited civilian medical personnel, particularly nurses, from the Hawaiian Islands. Despite his efforts, shortages lasted well into 1944.[19]

In some respects, the largest hospitals suffered the most. As the endpoints of the chain of evacuation, general hospitals took up the slack for small facilities. Organized as a 1,000-bed hospital, Tripler expanded to more than 1,500 beds by the end of 1942. Although its authorized bed strength reached 1,500 in 1943, the hospital again expanded to more than 2,100 beds by the end of that year. Adding beds was easy; staffing them was difficult and slow. As a result, Tripler was continually understrength. The teaching function also burdened the big hospitals. Personnel sent to Tripler for training required supervision, demanding additional effort from the staff without adding proportionately to the working effectiveness of the hospital.[20]

Army nurses and hired civilian nurses found much work to do as the islands organized, first for defense and then for attack. After hostilities started, King sent Army nurses from Tripler, Schofield, and Hickam hospitals to staff the provisional facilities. As more troops came to the islands and new hospitals were set up, he dispersed nurses further, necessitating constant recruitment from civilian sources on the islands and from Army sources on the mainland. The nurse census rose from 195 at the end of 1941 to 960 at the end of 1943. Some of the recruits became scrub nurses; others worked in wards. Still others took advantage of Tripler's four-month course on the theory and practice of anesthesia, and formed teams of anesthetists. In turn, they trained enlisted technicians, since female nurses could not accompany assault forces into battle. In 1943 squadrons of air evacuation nurses came to Hawaii to serve with the Army Air Forces.

Skilled women found a variety of tasks to perform. An Army nurse served as liaison officer between the Nursing Division of the Office of Civilian Defense and the Army. Army nurses worked in public health, assisting the civilian community in the immunization campaigns and in a variety of measures for controlling dysentery, polio, and dengue. In general, their morale was good as long as they were kept busy. However, like other Army officers, nurses griped about rotation, leaves, and promotions. Because of the personnel shortages, many did not return to the mainland for four or five years. Only in 1945 was the Army Medical Department able to adopt a policy of rotation for nurses with two years of overseas service.[21]

Unlike nurses, Army dental officers were often called upon to work outside their own profession—by no means an unusual demand in the Army. Hospital units training and staffing in Hawaii used dentists to direct their medical supply and transport or to serve as quartermaster officers and training

[19]Whitehill, "Medical Activities in Middle Pacific," block 3, pp. 3–4, 20, file 314.7; CSurg, Haw Dept, Annual Rpt, 1942, sec. 1, p. 13, file 319.1–2. Both in HUMEDS, RG 112, NARA.

[20]Tripler Gen Hosp Annual Rpt, 1943, pp. 1–7, file 319.1–2, HUMEDS, RG 112, NARA.

[21]Whitehill, "Medical Activities in Middle Pacific," block 11, pp. 2–18, file 314.7; Intervs, Capt Edith A. Aynes, 24 Sep 43, Capt C. Elva Collison, 16 Oct 43, and Col Kermit H. Gates, 17 Jul 45, file 000.71; CSurg, USAFMIDPAC, Annual Rpt, 1945, pp. 77–78, file 319.1–2. All in HUMEDS, RG 112, NARA.

instructors. During the assault phases of combat, when practically no dentistry was practiced, dentists were expected to perform a number of ancillary duties: assisting battalion surgeons; treating shock and maxillofacial wounds; administering general anesthesia; helping in the wards; and performing minor surgery to remove missile fragments and other debris. They might also be called upon to act as sanitary, supply, and administrative officers. To prepare for these tasks, dentists received extra training in Hawaii, especially in the areas of maxillofacial wounds and general anesthesia. Though traditional in the Army, such diversions from one's military occupational specialty may help to explain why shortages of dentists occurred, especially at isolated garrisons. The dental section of King's office tried to alleviate the problem by employing three mobile trailers to care for troops on outlying islands and by placing four extra clinics on Oahu—in gymnasiums, community halls, and even Japanese temples—to serve units that were without dentists.[22]

With their varied responsibilities in food inspection, animal care, and the anti-biological warfare program, the need for more veterinarians in Hawaii was apparent early. King's staff established schools to train food inspectors, and Oahu soon boasted two animal hospitals—the Veterinary General Hospital near Fort Armstrong, and the Veterinary Station Hospital at Schofield Barracks. By the end of 1943 the Army veterinary service extended to all islands of the Hawaiian group and to Christmas Island.[23]

Care of the Troops

Throughout the years of preparation, medical personnel of the Hawaiian Department practiced their skills, received training, and taught others. Meanwhile, combat units were training for their own roles in the fighting that lay ahead.

The six Army infantry divisions that trained and staged in Hawaii—7th, 27th, 81st, 96th, 77th, and 98th—brought with them their own medical support. For the 27th Division, this meant initially the 102d Medical Regiment. A New York National Guard outfit, the 27th was federalized in 1940, trained in Alabama and California, and prepared to move overseas. Part of the medical preparation consisted of inoculations against yellow fever and typhoid. Cases of hepatitis began to appear at Fort Ord, California, and the incidence rapidly grew to the dimensions of an epidemic while the division was moving to the island of Hawaii during March 1942. Medical personnel inspected all divisional units for the jaundice that was the principal symptom of the disease; several units had to be quarantined, and many soldiers were hospitalized. The reason—though few were yet aware of the fact—was contaminated serum used by the Rockefeller Institute to prepare some batches of the yellow fever vaccine. The contamination caused the only world-

[22]Whitehill, "Medical Activities in Middle Pacific," block 9, pp. 2–20, file 314.7; Surg, Schofield Barracks, Annual Rpt, 1942, pp. 1–5, in CSurg, Haw Dept, Annual Rpt, 1942, sec. 2, file 319.1–2. Both in HUMEDS, RG 112, NARA.

[23]Whitehill, "Medical Activities in Middle Pacific," block 10, pp. 3–5, 18–25, file 314.7; Interv, Col Wayne O. Kester, 19 Sep 45, file 000.71. Both in HUMEDS, RG 112, NARA.

wide epidemic to strike American forces during the war.[24]

While those with hepatitis were cared for at the 156th Station Hospital on Hawaii, those who were healthy worked hard building defensive positions and living quarters. In common with other forces in the islands, 27th Division infantrymen dug underground aid stations to protect the wounded in case of renewed enemy attack. Jungle warfare training was intensive and continuous. Lacking the urban life of Oahu, the "big island" yielded limited recreation for off-hours, and water was scarce and the diet monotonous. Perhaps in consequence, the soldiers developed a taste for sake (rice wine), which was brewed locally; when "mixed with beer or other liquor . . . ," sake had, according to the division surgeon, "a paralyzing effect." Venereal disease was kept under control by a rigorous program of inspection and contact tracing, implemented by the Territorial Board of Health. Preventive medicine included programs of rat control, all the more important because sporadic cases of plague occurred among the local population; and mosquito and fly control, made necessary by the warm damp climate. In July the 148th General Hospital arrived on Hawaii, and the division surgeon worked out consolidated plans with the two hospitals for mutual support in case of attack.[25]

A feature of life on the outer islands was a multiplication of commands that might have spelled confusion, but in practice seemingly did not. Each island had a district command, which directed all tactical forces, and a command surgeon; each, as noted above, also had a service command and a service command surgeon. Add a division surgeon, and the possibilities existed for duplication or conflict. Several factors mitigated the situation. Not every island had a division surgeon in residence, and when it did he often took on one or more of the other jobs as well as his own. Thus, for five months in mid-1942 the 27th Division surgeon on Hawaii functioned as the district surgeon and the service command surgeon. He cared for the troops, supervised the immunization of all civilians against typhoid and smallpox, and in general repeated locally the kind of unified leadership that King gave the medical service as a whole.[26]

Other divisions had similar experiences. The 40th Infantry Division was dispersed over several islands after its arrival on 1 September. Its division surgeon was designated district surgeon on the island of Kauai. On Maui a medical battalion commander served as district surgeon, and as such supervised all tactical medical units. Meanwhile, the local service command surgeon functioned in much the manner of a post surgeon, providing hospitalization for all troops but only routine medical care for service units.[27]

So organized, the medics supported the islands' defenders through the last quiet months that many would see for the remainder of the war. In September

[24]The epidemic caused 4,624 hospitalizations in the Hawaiian Department; the death toll is unclear. See CSurg, Haw Dept, Annual Rpt, 1942, sec. 1, p. 5, file 319.1–2, HUMEDS, RG 112, NARA.

[25]Surg, 27th Inf Div, Annual Rpt, 1942, pp. 1–3 (quotation, p. 2), in CSurg, Haw Dept, Annual Rpt, 1942, sec. 2, file 319.1–2, HUMEDS, RG 112, NARA.

[26]Ibid., pp. 3–4, in ibid.

[27]Surg, 40th Inf Div, Annual Rpts, 1942, and 1943, p. 1, and Surg, Maui Dist Cmd, Annual Rpt, 1943, p. 1, The Historical Unit (THU) Note Cards, Historians files, HUMEDS, RG 112, NARA.

the 27th Division was triangularized and, as a result, its 102d Medical Regiment reorganized into the 102d and 71st Medical Battalions; the 102d remained with the 27th and the 71st was subsequently attached to the 40th Division. A short time later the 27th moved to Oahu, where training became even more intensive than before, with the introduction of commando-type exercises. As on Hawaii, fixed hospitals and field units were closely integrated for medical support, with the North Sector General Hospital prepared to hospitalize casualties of the 27th and 40th Divisions in case of enemy attack. Guarding the coast between Pearl Harbor and Diamond Head, the division enjoyed nine more battle-free months, though the training schedule clearly indicated what lay ahead.[28]

The air surgeon, Col. Andrew W. Smith, MC, provided the Seventh Air Force, the new name of the Hawaiian Air Force as of March 1942, with a distinctive medical service at the unit and dispensary level. Only the large permanent installations—Kahuku Army Air Base and Hickam, Wheeler, and Bellows Fields on Oahu; Hilo Field on the big island of Hawaii; and Barking Sands Army Air Base on Kauai—had the medical facilities to care for ground crews, each headed by a flight surgeon whose age or physical status made him unavailable for combat duty. Squadron flight surgeons and the medical units they commanded formed the so-called tactical service. Squadrons



COL. ANDREW W. SMITH, MC

and their flight surgeons rotated through the small scattered outposts in the combat zone, including those on Midway, Christmas, and Canton Islands, where they received field training. For evident reasons, the tactical service was required to function independently of the base medical installations. Some duplication resulted on well-established bases, where base and squadron medics worked side by side. But the tactical service enabled squadrons at a few hours notice to move into remote bases, where local medical support was nonexistent.

The medical problems of airmen were varied and special. Some related to the rigorous physical standards required for flight status; base installations devoted much time to examining candidates for flight training and retesting fliers, espe-

[28]Surg, 27th Inf Div, Annual Rpt, 1942, p. 3, in CSurg, Haw Dept, Annual Rpt, 1942, sec. 2, file 319.1–2; Surg, 40th Inf Div, Annual Rpts, 1942, and 1943, p. 2, THU Note Cards, Historians files. All in HUMEDS, RG 112, NARA. See also Edmund G. Love, *The 27th Infantry Division in World War II* (Washington, D.C.: Infantry Journal Press, 1949), p. 21.

cially their eyes and ears. A distinct subspecialty of aviation medicine was maturing during the war, as researchers studied the effects of acceleration, depressurization, high altitude cold injury, and the peculiar psychological stresses of combat flying—"aerio-neurosis, or cumulative fatigue; call it what you will," said Colonel Smith. Scientific considerations interacted with the drive for an independent air service, producing a complicated worldwide struggle between the Army Air Forces and Army Service Forces over control of medical logistics and hospitalization. During these early days in the Hawaiian Department, the main complaint of the air surgeon was the lack of promotions for his subordinates, resulting from the fact that the buildup of air support had outrun paperwork. Neither the individual air bases nor the Seventh Air Force had an authorized table of organization, and regular medical officers in the Hawaiian Islands found themselves outranked by newly activated reserve officers from the mainland.[29]

Besides its scientific and bureaucratic difficulties, the Army Air Forces was itself a source of some medical problems. Planes traveled daily from tropical battlefronts to bases in the Hawaiian Islands, many carrying the wounded or sick. Hence, quarantine was a pressing problem of air travel. Airmen, using hand pumps, sprayed planes with pyrethrum and carbon tetrachloride on their arrival and before departure. Arriving pets were quarantined; parrots were destroyed for fear of psittacosis; and "any number of disease-bearing insects, including the dreaded Anopheles," were wiped out. Despite such precautions, an epidemic was touched off in July 1943 by two fliers who returned from the Southwest Pacific Area with dengue (breakbone) fever. A massive military-civilian effort to destroy mosquitoes resulted, as the disease spread among the civilian population. Quick action limited the outbreak to Oahu, but 1,500 cases were recorded before it ended.[30]

Prehospital medical care for coast and antiaircraft artillery troops was similar to that provided for the Seventh Air Force. On 16 March 1942 General Emmons split the Hawaiian Coast Artillery Command into two separate organizations, the Hawaiian Seacoast Artillery Command and the Hawaiian Antiaircraft Artillery Command. The medical service of the two organizations was much alike. The Seacoast Artillery Command was divided into four harbor defense areas, each with its own surgeon. The Antiaircraft Artillery Command was reorganized into groupments of several regiments, with a surgeon for each groupment. Regimental surgeons were responsible to the groupment surgeon. Unit medics provided care to the widely dispersed troops through many small dispensaries and regimental and battalion aid stations. In the Seacoast Artillery Command, as in the Seventh Air Force, the station and the tactical medical services were separate endeavors.[31]

[29]Quotation from Surg, 7th Air Force, Annual Rpt, 1942, p. 6, in CSurg, Haw Dept, Annual Rpt, 1942, sec. 2, file 319.1–2, HUMEDS, RG 112, NARA. On air medicine, see Mae Mills Link and Hubert A. Coleman, *Medical Support of the Army Air Forces in World War II* (Washington, D.C.: Office of the Surgeon General, USAF, 1955), pp. 305–39.

[30]Quotation from Surg, 7th Air Force, Annual Rpt, 1942, p. 6, in CSurg, Haw Dept, Annual Rpt, 1942, sec. 2, file 319.1–2, HUMEDS, RG 112, HUMEDS, NARA. See also Allen, *Hawaii's War Years*," pp. 337–38.

[31]Surgs, Haw Seacoast Arty and Haw AAA Cmds, Annual Rpts, 1942, in CSurg, Haw Dept, Annual Rpt, 1942, sec. 2, file 319.1–2, RG 112, HUMEDS, NARA.

Evacuation both to and from Hawaii remained a major concern of the chief surgeon. Among King's problems were the neuropsychiatric cases that formed a large percentage of the evacuees arriving on Oahu from other parts of the Pacific. Early in the war the Hawaiian Department evacuated such patients to the mainland as soon as possible. During 1942 and 1943 psychoneurotics and psychotics accounted for over 30 percent of evacuees. Only in 1944 did faster diagnosis and better forward treatment prevail, causing the evacuation rate to fall.[32]

The seriously ill and injured were evacuated from the Oahu medical centers to the zone of interior, generally on transports. Early in the war a shortage of ships and the absence of adequate hospital facilities on board those that were available presented serious problems. During late 1941 and the latter part of 1942 the lack of transportation created several months' backlog of casualties awaiting evacuation. (After one of these delays, King's office had to ship over 400 to the mainland at one time.) A more serious difficulty resulted from the absence aboard of adequate secure accommodations for neuropsychiatric cases, for most of the transports arriving in Honolulu had either very small secure sections or none at all.

During 1943 evacuation to the mainland increased and proceeded regularly, except for the month of August, when a shortage of ships caused another backlog. Medical hospital ship platoons were organized and assigned to the transports in the Central Pacific Area, providing better care for all evacuees during the long voyage to the United States. Transports continued to be the principal means until August 1944, when more planes of the Army Air Forces' Air Transport Command became available. Thereafter, the Army was able to evacuate increasing numbers of casualties by air.[33]



ZONE-OF-INTERIOR EVACUATION

Within the theater, planes provided the principal means of evacuating the wounded or sick from other islands to the Oahu medical centers. Early in the war Army and Navy tactical and transport planes did the flying with a medical officer, not always a flight surgeon, on board. At the start of the central Pacific campaigns in November 1943 the

[32]Whitehill, "Medical Activities in Middle Pacific," block 8, pp. 3–5, file 314.7, HUMEDS, RG 112, NARA.

[33]Ibid., pp. 3–5, 14, file 314.7; Memo, King to Ed., History of Medical Department, 22 Mar 50, p. 13, file 000.71; Interv, Brig Gen Harry D. Offutt and Col Alvin L. Gorby, 10 Nov 49, file 000.71. All in HUMEDS, RG 112, NARA.

Pacific Wing of the Air Transport Command became responsible for air evacuation of Army casualties in the area, though the Naval Air Transport Service continued to evacuate some of them. To enable qualified medical personnel to be on every flight, air medical squadrons, each consisting of a flight surgeon, eight nurses, and twelve enlisted men, were assigned to the Air Transport Command. If for some reason an air evacuation squadron was unavailable, air force units were expected to provide the medics and flight surgeons. Before departure, flight surgeons had the additional responsibility of deciding if casualties were capable of making the trip and what medications and supplies they would need during the flight. Flight surgeons now were principally employed in selecting the cases to be evacuated and preparing them for the trips, while a flight nurse and a technician accompanied them on their journeys.[34]

As a result of all these changes, Hawaii evolved into a communications zone for the central Pacific campaigns. King's efforts were aided immensely both by Nimitz' full acceptance of the spirit of a combined command and by Emmons' support, shown most clearly in his decision to unite the two top Army medical positions under one man. Unified and competent leadership, ample time to prepare, and the absence of the nightmarish jungles of less fortunate theaters marked the central Pacific during the year and a half that elapsed between the Pearl Harbor raid and the launching of Admiral Nimitz' drive to the west.

The South Pacific Area

On 20 April 1942 the Joint Chiefs of Staff established the South Pacific Area as a subdivision of Pacific Ocean Areas, at the same time deciding that the initial offensive against Japan should be launched there. In July, to provide unified command of Army troops, the United States Army Forces in the South Pacific Area (USAFISPA) was established, with headquarters in Auckland, New Zealand, and Maj. Gen. Millard F. Harmon, the Air Staff Chief, designated as commanding general. Harmon was directly responsible to Vice Admiral Robert L. Ghormley, chief of the South Pacific Command (COMSOPAC), and, after October 1942, to Ghormley's successor, Vice Admiral William F. Halsey, who was promoted to admiral on 18 November. The area logistical command, the United States Army Services of Supply (USASOS), was under Brig. Gen. Robert G. Breene.

By November both COMSOPAC and the USAFISPA headquarters moved to Noumea, New Caledonia, near the combat zone. As the front advanced, Ghormley created additional area combined commands on the most important islands occupied by U.S. forces. Beginning in November, he established service commands, in effect base sections supporting the forces on a particular island or island group. While the island commanders, regardless of service, reported to General Harmon, the service commanders were responsible to General Breene. In many respects, the theater represented a workmanlike solution to the problems of combined com-

[34] 26th Sta Hosp Annual Rpt, 1943, p. 1, in CSurg, USAFICPA, Annual Rpt, 1943, sec. 6, file 319.1–2; Whitehill, "Medical Activities in Middle Pacific," block 8, pp. 6–8, file 314.7; Interv, Col Paul H. Streit, 21 May 45, file 000.71. All in HUMEDS, RG 112, NARA.

mand. But geography and deficient resources united to create difficult problems for the medics to solve.[35]

Most of the South Pacific Area was open ocean. Its islands included New Zealand, smaller but still sizable New Caledonia, Fiji, and Espiritu Santo, and thousands of small islands in the Cook, Society, and Marquesas groups, many mere dots on the map. Distances were great. Auckland, New Zealand, lies more than 1,100 miles from New Caledonia, nearly 1,600 miles from Espiritu Santo in the New Hebrides, and more than 2,000 miles from Guadalcanal. Cultural differences divided these lands from one another even more widely than the miles.

New Zealand possessed a temperate climate, large towns, and a population predominantly of European descent.[36] It resembled its huge neighbor, Australia, in its dependence on grazing and on exports—mutton, wool, butter, and cheese. A British dominion, New Zealand was self-governing, with a well-developed system of public health and welfare. Divided into health districts, each headed by a qualified physician under a national director-general, the island country of 2 million enjoyed the lowest death rate in the world.

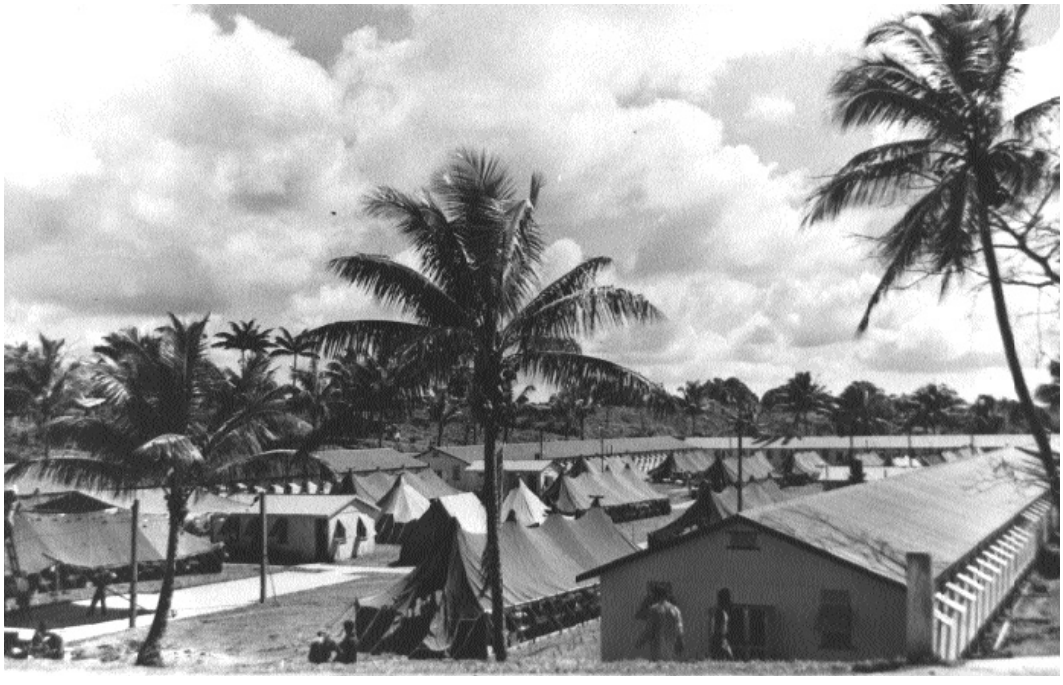
Americans came early to New Zealand, but few lingered for long. Almost from the beginning of the war, American ships made use of its harbors, and the 37th Infantry Division and 1st Marine Division encamped there for a few months in the summer of 1942. However, Japan's reverses at sea demonstrated that the war would be fought to the north. With the departure of Halsey's and Harmon's commands to New Caledonia, the only headquarters left in Auckland was the United States Army Forces in New Zealand, with its own surgeon—Lt. Col. Wallace I. Douglas, MC, and later Lt. Col. Amos R. Koontz, MC—to supervise the service troops and others who remained.[37] By the end of the year New Zealand had become simply an island command, but in many ways an atypical one.

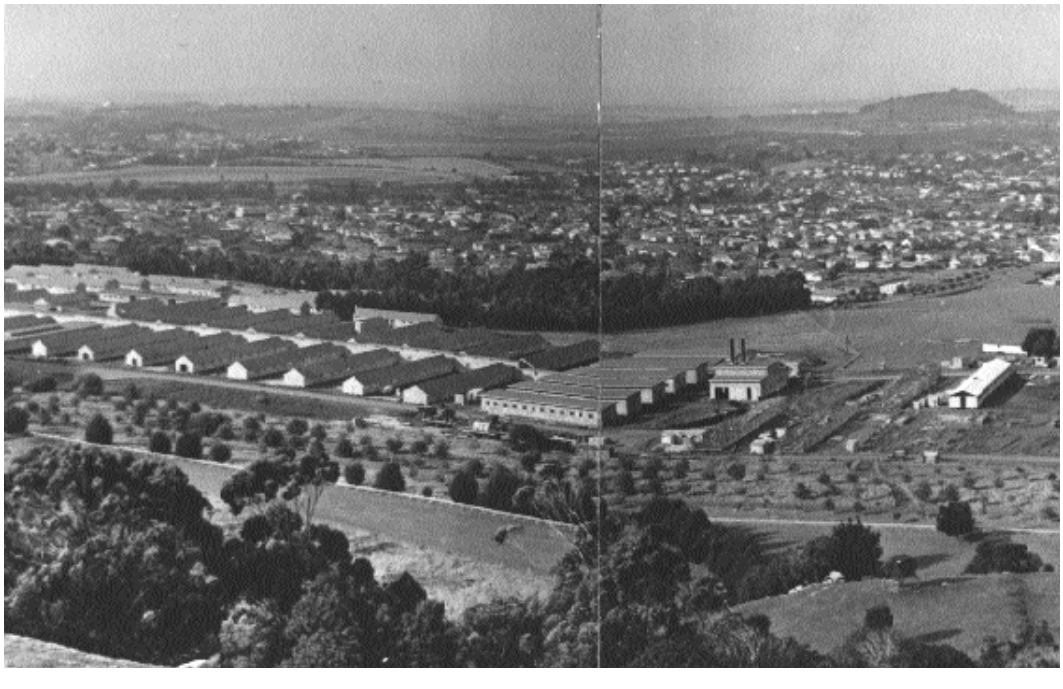
During 1942 hospital care of American troops fell first to New Zealand facilities and then to the U.S. Navy, though the Army's 18th General Hospital stopped off briefly on its way to Fiji. Toward the end of October work began on a 1,000-bed general hospital plant near Auckland, but the 39th General Hospital, which was destined to occupy it, found the facility incomplete when it arrived in November. For several months its personnel worked in Navy hospitals or repaid part of the Army's debt to civilian physicians by serving in the Auckland City Hospital, where doctors were in short supply. Not until February 1943 were the first Army patients transferred from Navy care to the new plant, which had been constructed by the civil government and

[35]Morton, *Strategy and Command*, pp. 256–63; John Miller, jr., *Guadalcanal: The First Offensive*, United States Army in World War II (Washington, D.C.: Historical Division, Department of the Army, 1949), pp. 1–3; Armfield, *Organization and Administration*, p. 397.

[36]Narrative on New Zealand based on Eugene T. Lyons, "Australia and New Zealand," in Ebbe Curtis Hoff, ed., *Civil Affairs/Military Government Public Health Activities*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1976), pp. 554–64.

[37]Colonel Koontz found sanitary conditions in the dairy, meat, bottling, and restaurant industries to be unsatisfactory and the Health Department's general cooperativeness somewhat hampered by political considerations. See Surg, USAF and Svc Cmd [New Zealand], Annual Rpt, 1943, file 319.1–2, HUMEDS, RG 112, NARA.





FACILITIES OF THE 18TH GENERAL HOSPITAL *(top)* AND THE 39TH GENERAL HOSPITAL *(bottom)*

loaned to the American Army. For its twenty-one months of operation, the 39th General Hospital remained the only U.S. Army hospital permanently assigned to New Zealand. In time, it expanded to more than 2,500 beds and added a convalescent facility as well, caring for over 23,000 casualties, mostly the sick and wounded from the fighting in the tropical islands to the north.

For the men and women who served there, New Zealand offered many amenities. Unlike their fellows in Australia, most medics worked in established cantonments near cities with water and sewage systems. Venereal disease was never a problem. The Army set up prophylactic stations, and the authorities cooperated freely, tracing contacts and compelling infected women to receive treatment. New Zealand's disease environment resembled that of other temperate lands, and the lack of anophelines meant that malarious servicemen who returned from the fighting for rest and retraining could go where they pleased, enjoying the extraordinary scenery without endangering their hosts.

The chief problems that developed between American medical officers and the New Zealand authorities had to do with food and food products. Large quantities of food for American troops were procured by the Joint Purchasing Board, an agency of the U.S. Navy with some Army members. The board dealt with the government procurement officials, who then signed contracts with local producers. This setup effectively insulated the producers from inspection by American officers during processing; not until 1944 were Veterinary Corps officers allowed to begin large-scale inspections of slaughterhouses, dairies, and canneries. Yet wartime demands multiplied such establishments, many in unsatisfactory sanitary condition. Here, as in Australia, persuasion and education in improved methods were the main reliance for bringing about change. Milk was a special problem. Dairy herds were widely infected with tuberculosis and undulant fever, and New Zealand, despite its huge herding industry, had comparatively few veterinarians and no school of veterinary medicine. Milk was so often a cause of typhoid that New Zealanders themselves preferred to drink condensed milk and tea. Veterinary officers failed in their efforts to effect reforms, forcing military commanders to place milk bars off limits to their troops. But this was the only major sour note in an economic relationship that saw more than 500 million pounds of animal foods purchased in New Zealand for American forces in the Pacific war.

Much happier were the professional contacts between American and New Zealand physicians, both military and civilian. As already noted, they cared for each others' patients; New Zealanders instructed Americans in tropical medicine; and the Auckland branch of the British Medical Association held monthly meetings with the combined staffs of the U.S. Navy hospitals and the 39th General Hospital. Good relations continued long after New Zealand had ceased to be the South Pacific Area's headquarters and main base, for it remained a perfect spot to rehabilitate battle casualties from the jungle warfare to the north.

The other islands of the South Pacific Area were either tropical or subtropical, with heavy rainfall, high humidity, and a variety of diseases afflicting the native

inhabitants. All were colonies of either France or Britain. Responding to the distribution of vectors and the accidents of settlement, ailments differed widely from island to island. New Caledonia and the Fiji, Cook, Society, and Marquesas Islands were free of malaria, but on the New Hebrides and the Solomons the disease was rife. The first epidemic of the South Pacific Area broke out in April 1942 on Efate in the New Hebrides, where the malaria rate reached 2,700 per 1,000 troops per year, and lesser outbreaks occurred on Espiritu Santo and in the Russell Islands. Troops stationed in the eastern part of the region suffered from filariasis, caused by a parasitic worm; epidemics of dengue broke out on New Caledonia and Espiritu Santo. Bacillary dysentery was common, though seldom serious. Venereal disease varied from island to island—a problem in the Fiji Islands, but not on New Caledonia, for example—influenced by local mores and the efficiency of the civil government. Natives, reservoirs of many diseases that attacked the troops, were themselves highly susceptible to influenza and measles, and had to be protected from these infections. The primitive and tropical, not the temperate and urban, South Pacific formed the disputed region and set the terms of the medical problem.[38]

U.S. Army forces began moving into the tropical islands of the South Pacific Area shortly after Pearl Harbor, aiming to prevent further Japanese advances and to protect the Allied line of communications to Australia. Early in 1942 New Caledonia's evident military importance caused the United States to assemble and dispatch Task Force 6184, containing a mixed bag of troops and a brigade headquarters under Brig. Gen. (later Maj. Gen.) Alexander M. Patch, Jr. The Army's most unusual division, the Americal, was formed on New Caledonia from this task force in May. The 37th Division arrived in the Fijis, while smaller units entered the Tonga Islands and the New Hebrides. After June, in preparation for a planned offensive against Guadalcanal and Tulagi, troop strength continued to increase, reaching 104,662 (including three divisions and five air combat groups) by the end of the year. Marine and naval forces were augmented as well, and by mid-1943 the South Pacific held more than 192,000 American troops. Preventive medicine and treatment of those who were sick or wounded absorbed the time and efforts of about 1,200 medical personnel.[39]

Medical Organization

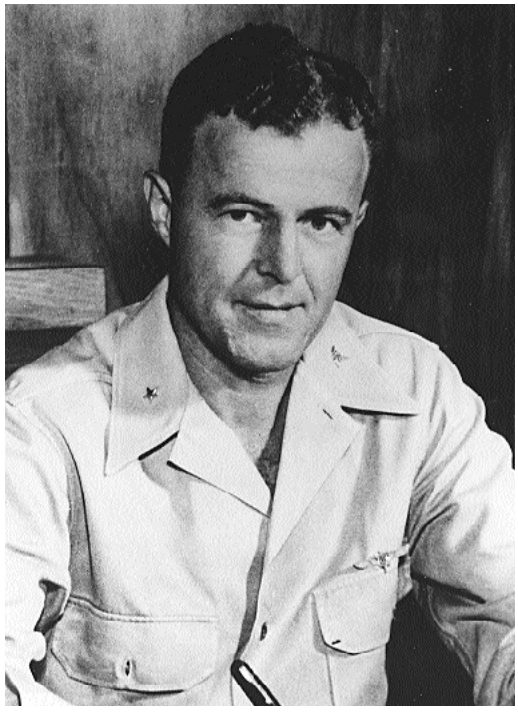
The summer of 1942 saw the creation of an Army medical organization in the

[38]Benjamin M. Baker, "South Pacific Area," in W. Paul Havens, Jr., ed., *Activities of Medical Consultants*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, 1961), pp. 569–71; Paul A. Harper et al., "New Hebrides, Solomon Islands, Saint Matthias Group, and Ryukyu Islands," in Ebbe Curtis Hoff, ed., *Communicable Diseases: Malaria*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963), p. 400.

[39]CSurg, USAFISPA, Annual Rpts, 1942, pp. 1–2, and 1943, pp. 3–4, file 319.1–2, HUMEDS, RG 112, NARA. See also Maurice Matloff and Edwin M. Snell, *Strategic Planning for Coalition Warfare, 1941–1942*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, p. 1953), pp. 301–05. By the spring of 1942 soldiers were stationed on ten islands: New Zealand, New Caledonia, Efate, Espiritu Santo, Fiji, Tongatabu, Bora Bora, Aitutaki, Tongareva, and Guadalcanal.

South Pacific. On 6 August Lt. Col. Earl Maxwell, MC, became Chief Surgeon, USAFISPA, and assistant to the Navy's chief surgeon, Capt. Arthur H. Dearing, MC. With overall responsibility for medical support in South Pacific operations and with a staff of only three, Dearing often turned planning over to Maxwell and his staff of seven officers and fifteen enlisted men. Dearing also relied on Maxwell to plan support for Army combat troops in all operations (Maxwell would later draw up medical plans for both the Army and the Navy in the Bougainville campaign), reserving for himself only the right to final approval. Such cooperation, a hallmark of the South Pacific Area, was especially important to the planning and execution of amphibious operations.[40]

A native of Illinois, Maxwell was 38 years old when he joined General Harmon's staff. He already had almost fourteen years of experience as an Army medical officer, as chief of the eye, ear, nose, and throat service in several military hospitals, and as base surgeon at Army installations in the United States and the Canal Zone. A graduate of the Army's School of Aviation Medicine, Maxwell was rated a flight surgeon, and as a representative of the Army Air Forces he functioned as air surgeon of the South Pacific Area. In November, shortly after his promotion to full colonel, he assumed the additional function of USASOS surgeon, which conformed to Navy practice and eliminated another possible source of friction.



BRIG. GEN. EARL MAXWELL, MC
(Rank as of 19 January 1944)

Staff surgeon both to Harmon and to Breene, air surgeon, and assistant to the Navy chief surgeon, he surmounted bureaucratic problems by personal qualities and the wearing of multiple hats. Under him the theater and USASOS medical sections, though organizationally separate, shared work space and assignments at Noumea. Operations and planning were the province of the theater staff, and medical supply, statistics, personnel, food inspection service, hospitalization, and others, that of the USASOS staff. The result was a more efficient system that eliminated duplication.

Maxwell appears to have been skillful and above all pragmatic in his handling

[40]Whitehill, "Medical Activities in Middle Pacific," block 3, p. 71, file 314.7; Interv, Col Samuel E. Stuart, 20 Jan 45, file 000.71; Interv, Col Earl Maxwell, 11 May 50, file 000.71. All in HUMEDS, RG 112, NARA. See also Armfield, *Organization and Administration*, p. 389. Maxwell's staff later increased to twenty-three officers and thirty-six enlisted men.

of the South Pacific Area. Indifferent to formalities, he readily shared equipment with the Navy (he could get jeeps, they could get Quonsets). He used troopships and supply planes to move wounded, without showing Carroll's concern over the lack of dedicated craft; he was quite willing to see soldiers hospitalized in Navy facilities, or sailors in Army ones. Confronted by opposition from affiliated hospitals when he tried to transfer their specialists to other units needing their services, he simply waited, knowing that boredom would cause many underemployed professionals to ask for transfers voluntarily. Finding that the Americal Division still had the medical regiment of an old-fashioned square division, he delayed reorganization as long as possible, remarking to Surgeon General Magee that "a little freedom from the restrictions and limitation[s] of current approved Tables of Organization . . . would improve the medical service in thes [*sic*] theater immeasurably." Informal, diplomatic, and precise, Maxwell won the reputation of a competent theater surgeon, gaining a brigadier general's star in the Army and, after the war, another in what became the independent Air Force.[41]

But unified management at the top could not, of itself, prevent disputes from arising at lower levels. Though Maxwell stood near the head of both service and island command channels, his control was hampered by the theater's great distances, which forced responsibility downward to levels where cooperation among the services and between the military and the colonial governments might or might not prevail. Naval leadership, however tactful, created problems. A basic difficulty was the complexity of the organization built up by the theater commanders. By comparison with General Headquarters, SWPA, a great number of subordinate forces reported directly to Ghormley's headquarters—USAFISPA, South Pacific Amphibious Force (Task Force 32); I Marine Amphibious Corps; ground troops of Allied nations; South Pacific Service Squadron (nontactical); South Pacific Aircraft (Task Force 33), which controlled land-based air; naval forces; and island bases. Each significant island had its own base commander, while the various elements present on the island—soldiers, marines, airmen, Allies, and so forth—were connected vertically to the theater headquarters through their own commands. In such a situation, command surgeons multiplied, each subject to his own immediate commander.[42]

Espiritu Santo presented an example of the problems that could arise. Largest of the New Hebrides and an important, heavily malarious base, the French-governed island lay about 480 miles from Guadalcanal. Quartermaster depots, an infantry training base, and coast artillery installations, as well as Navy bases and a Marine camp crowded a mountainous land, where the largest native village held only 152 people. Lt. Col. Arthur G. King, MC, served as both Espiritu Santo Service Command surgeon and IV Island Command surgeon, bearing unofficially the title of base surgeon.

[41]Quotation from Rpt, CSurg, USAFISPA, to SG, U.S. Army, 7 Dec 42, p. 2, Encl to CSurg, USAFISPA, Annual Rpt, 1942, file 319.1–2. See also Interv, Maxwell, 11 May 50, file 000.71. Both in HUMEDS, RG 112, NARA.

[42]On naval organization in the South Pacific Area, see John Miller, jr., *CARTWHEEL: The Reduction of Rabaul*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1959), pp. 67–70.

Seemingly, his position as, at least informally, chief surgeon of Espiritu Santo ought to have been clear. In fact it was not. The local Service Command was under the Island Command, but received all operational orders directly from the USASOS. The surgeon of the Thirteenth Air Force, located on Espiritu Santo, dealt directly with the USAFISPA headquarters, even though air force personnel were hospitalized in Service Command hospitals and air installations were subject to Service Command sanitary codes. The Navy had no single headquarters on the island until October 1943, and until that time King had to negotiate on matters of common concern with several senior Navy medical officers, including those who commanded two local Navy hospitals. Under a Navy surgeon, who reported directly to the island commander, the joint malaria and insect control organization obtained its personnel and supplies from King as the Service Command surgeon (*Chart 2*). Finally, said King, the Marine Corps "was integrated with these organizations in so cumbersome a manner that no attempts were ever made for official action."[43]

None of these complications made practical cooperation impossible, but they did cause endless unnecessary problems of detail. (For example, malaria control directives from the USASOS, the USAFISPA, or the surgeon general in Washington sometimes contradicted those promulgated by COMSOPAC.) Personal relations and informal agreements proved the key to success in bringing a semblance of order to medical policy and operations amid a baffling jumble of headquarters, services, and chains of command.[44]

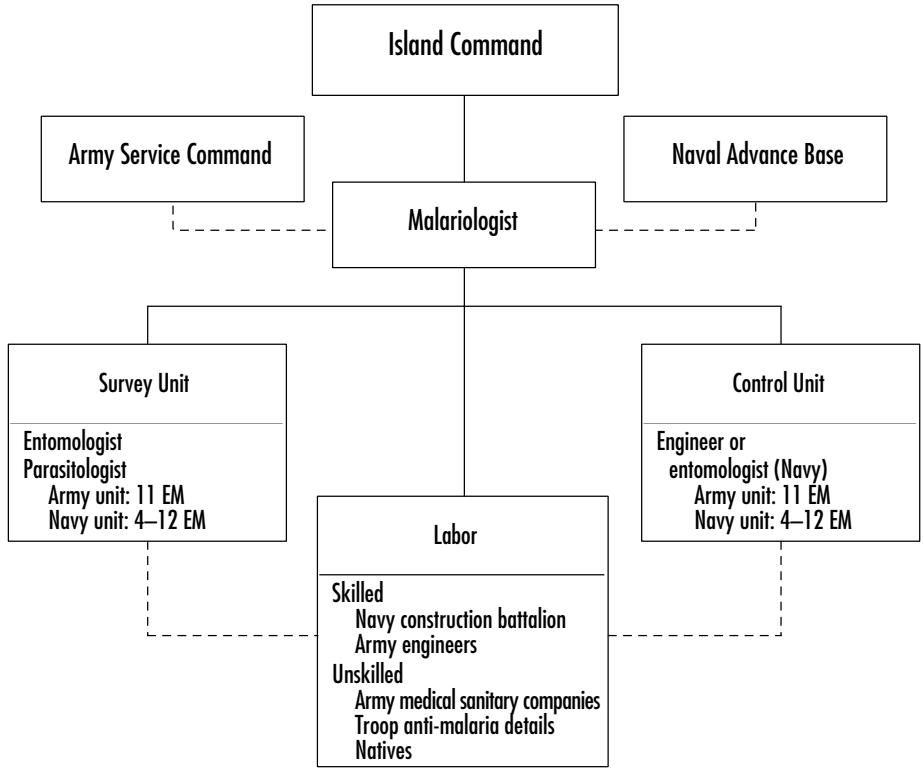
New Caledonia emerged as the center of medical activity following the transfer of the area command. A cigar-shaped island almost 250 miles in length, New Caledonia lies roughly halfway between New Zealand and the Solomons. A colony of France for almost a century, the island comprises some 8,500 square miles of varied countryside. In late 1942 its inhabitants included 65,000 civilians; a Free French colonial government in the capital, Noumea, with a battalion of troops; the Americal Division; a large naval base; a few Australian commandos; and a service command. From the medical viewpoint, the ample island with its mild subtropical climate provided an excellent base. More hospitals were set up than anywhere else in the South Pacific, including the 8th and 29th General Hospitals; the 52d Evacuation Hospital; and the 9th, 27th, 31st, 109th, 331st, 332d, and 336th Station Hospitals.

Units newly arrived had a rough initiation, building their own hospital plants amid torrential rains, swarming insects, and organizational confusion. But in time excellent structures took form mostly of wood or prefabricated materials, with staff quarters and recreation buildings often of native construction set on cement floors. Bamboo walls and thatched roofs made for cool comfortable dwellings, and tropical flowers bloomed in landscaped gardens. Views of Pacific breakers and "lofty mountains and knife-like ridges cutting into the

[43]Arthur G. King, "Medical History of Espiritu Santo (New Hebrides) Service Command," pp. 3–4 (quotation), file 314.7 (South Pacific), HUMEDS, RG 112, NARA.

[44]Interv, Capt Roy Wisenbaker, 4 Feb 44, file 000.71, HUMEDS, RG 112, NARA.

CHART 2—TYPICAL JOINT MALARIA AND INSECT CONTROL ISLAND ORGANIZATION

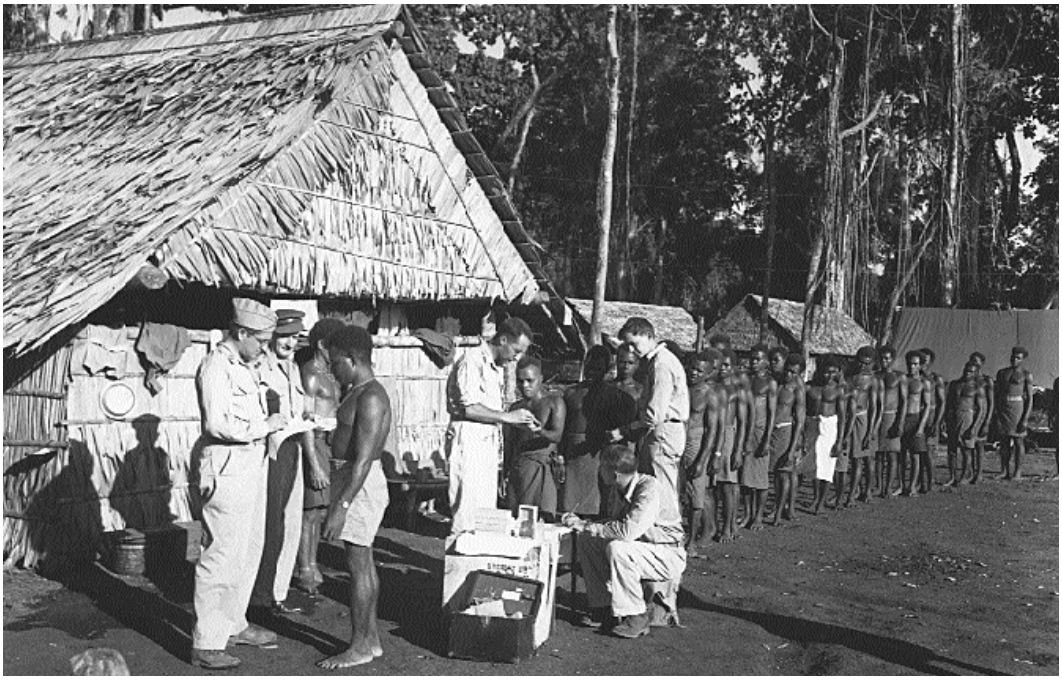


Source: Adapted from Harper et al., "New Hebrides, Solomon Islands, Saint Matthias Group, and Ryukyu Islands," in Hoff, ed., *Communicable Diseases: Malaria*, p. 442.

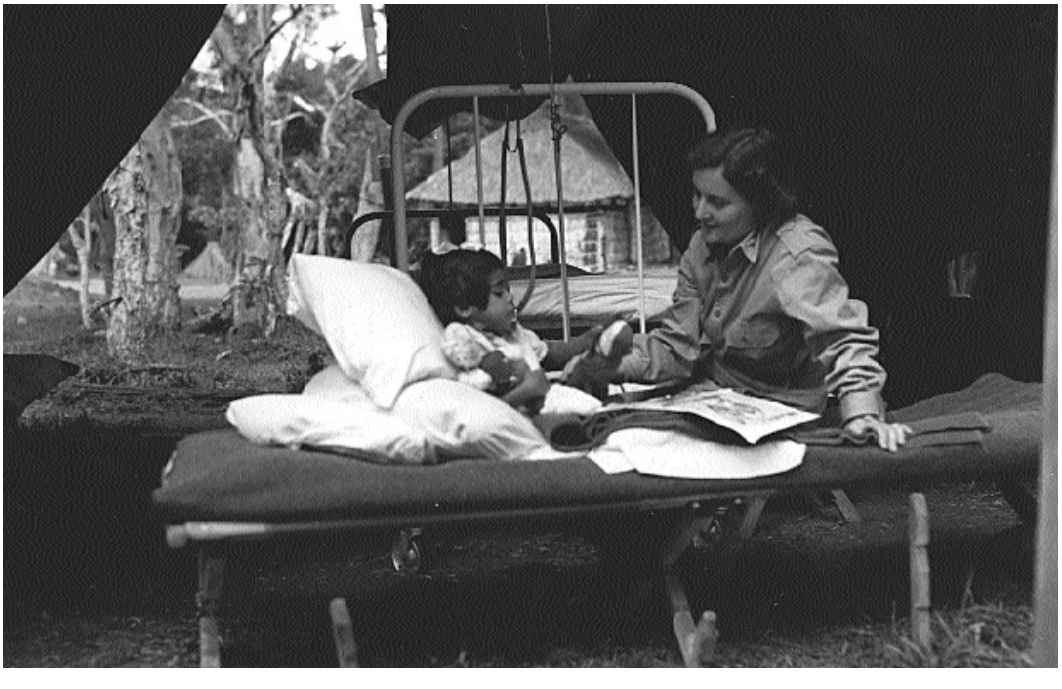
sky" welcomed soldiers wounded in battle or riddled with tropical diseases.[45]

On other major islands, variation was the rule. Fiji was atypical, the only island group in which doctors, hospital corpsmen, and Army nurses (of whom about 1,000 served in the South Pacific Area) found ready-made hospital plants like those of New Zealand. Espiritu Santo presented a picture more typical of the region as a whole. Officers of the 25th Evacuation Hospital, arriving on Thanksgiving Day, began to build their plant in a grove of cocoanut palms amid a sea of mud, caused by rains so heavy that visibility fell to three or four feet. Surgeons worked beside enlisted men, finishing the first structures before the nurses arrived in February 1943. Finding the hospital in "rainsoaked, mud-bespattered cocoanut groves," the nurses spent their first weeks caring for patients "to the tune of roaring and clanking tanks and bulldozers." Gradually the noise of construction ended, the hospital grounds were land-

[45]Ruth B. Kelly, "History of Nursing Service in the South Pacific, World War II," pp. 11–12 (quotation), file 314.7 (South Pacific); Arthur G. King, "Medical History of New Caledonia Service Command," file 314.7–2 (Medical Activities). Both in HUMEDS, RG 112, NARA.



ISLAND MEDICAL CARE, *from testing for malaria to caring for a dying patient*



scaped, and the warmth and rain brought tropical shrubbery to luxuriant flowering. Now the nurses lived in comfortable barracks with electric lights, showers, toilet facilities, and dayrooms, and the hospital staff enjoyed sports, movies, and dances when not at work.[46]

Yet the nurses on Espiritu Santo—50 among 40,000 or so troops—experienced some rough moments still. Their presence inevitably created sexual tensions. Soldiers broke into their quarters, necessitating the posting of armed guards. The nurses learned, for their own safety, to go out only with groups, for single escorts were sometimes attacked, and one was shot. Some medical officers concluded, rightly or wrongly, that despite the exceptionally able service the nurses gave to the hospital, only male attendants should be employed under the conditions of the smaller South Pacific islands during wartime.

Boredom, feelings of alienation among the exotic surroundings, and envy of the Navy also characterized such situations. In the spring of 1943 Army hospitals on Efate and Espiritu Santo, though much improved, remained vastly inferior to the naval hospitals, which were housed in prefabricated buildings, with connecting corridors and linoleum-covered floors, and were equipped with white enameled hospital beds, white blankets, adequate supplies of linen, and unit laundries. Soldiers did not fail to notice that the Navy possessed much medical equipment that had been eliminated from Army hospital equipment lists to conserve critical shipping space. Maj. Gen. J. Lawton Collins of the 25th Infantry Division declared emphatically that the effect of such disparities on morale and efficiency in Army hospitals was bad.

The old adage that the Navy got the gravy seemed to hold true even for the sick and wounded, and the amenities that the Army hospitals did attain in any case were short-lived. When the front moved forward, orders arrived, and after a year or two the hospital staffs "tore down the fruits of their labor and moved on to build other hospitals, to work and slave in a new theater of operations."[47]

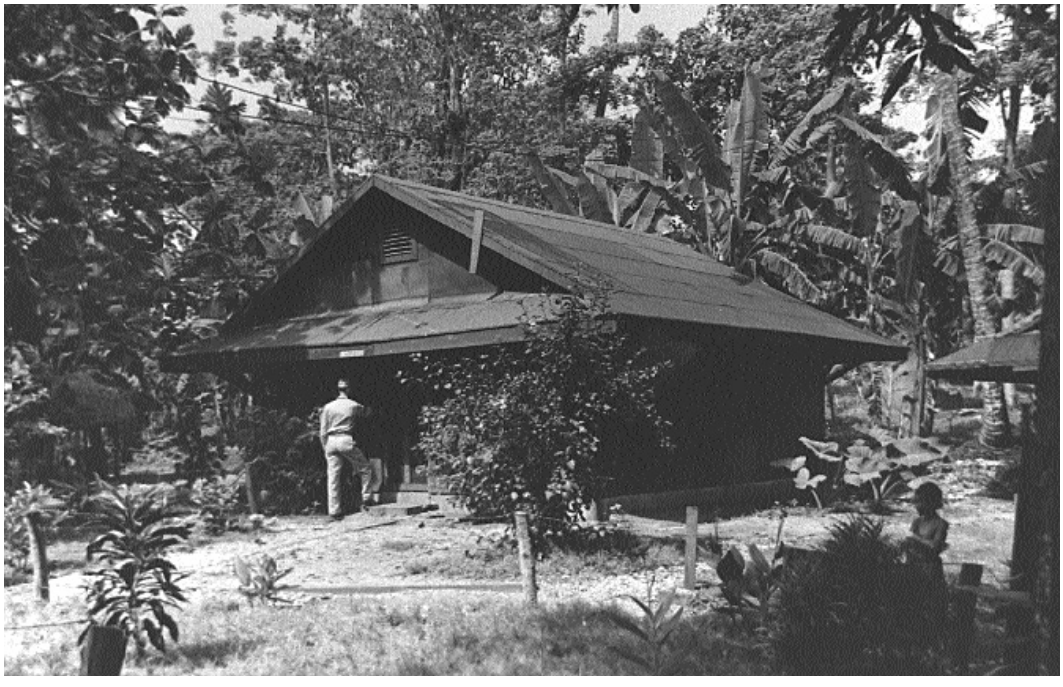
Medical Innovation

The greatest problem facing Maxwell and his staff was to adapt medical policy and organization, originally based on combat experience in World War I where land warfare along a cohesive front prevailed, to the geographical conditions of the South Pacific. Reorganization of units and innovations in hospitalization and supply were both needed. Responding to some of the same imperatives as the medics in the Southwest Pacific Area, Maxwell broke up large hospitals into small self-supporting units and allotted beds and personnel to each island according to need. Where islands were too small for full hospitals, he assigned field hospital platoons, augmenting them from time to time with surgeons from general hospitals.[48]

[46]Kelly, "History of Nursing Service," p. 9, file 314.7 (South Pacific), HUMEDS, RG 112, NARA.

[47]Quotation from ibid., p. 10, file 314.7 (South Pacific). See also Interv, Lt Col Willis J. Potts, 6 Apr 45, file 000.71. Both in HUMEDS, RG 112, NARA.

[48]CSurg, USAFISPA, Annual Rpts, 1942, pp. 1–2, and 1943, pp. 4–6, file 319.1–2; Interv, Maxwell, 11 May 50, file 000.71; 7th Evac Hosp Annual Rpt, 1942, p. 15, file 319.1–2; Rpt, Surg, 7th Evac Hosp, to SG, U.S. Army, 10 Aug 42, p. 7, file 319.1–1 (Bleacher). All in HUMEDS, RG 112, NARA. See also Baker, "South Pacific Area," in Havens, ed., *Activities of Medical Consultants*, p. 573.



FIELD HOSPITAL ON AITUTAKI

Like Carroll, Maxwell found that part of a hospital did not necessarily form a unit capable of acting alone. Small hospitals on isolated islands had to function independently, but without the necessary skilled personnel and equipment. Despite occasional visits by consultants, treatment at some of these facilities was hardly up to the highest standards. Again like Carroll, Maxwell labored under a shortage of beds. By the end of 1942 the Army on New Caledonia, Fiji, Tongatabu, Bora Bora, Aitutaki, and Tongareva had only 4,200 hospital beds for 110,047 troops—a ratio of fixed beds to troops of only 3.82 percent. During 1943 bed capacity increased to 14,815 for 176,254 troops, or 8.41 percent, still below the War Department's goal of 10 percent. But the War Department's own priorities slowed the movement of hospitals to the theater; transportation shortages hampered their transfer from one station to another; and in 1943 the Army occupied seven more islands or island groups, worsening a problem already severe.[49]

Good relations with the Navy and the Allies took up some of the slack. Sharing facilities kept the bed shortage from reaching crisis proportions. As noted above, Army casualties received treatment either in New Zealand military and civilian facilities or in U.S. Navy hospitals. In turn, the Army's 109th Station Hospital in New Caledonia treated New Zealand's 3d Division, and Army hospitals on Fiji

[49]CSurg, USAFISPA, Annual Rpt, 1942, pp. 2–3, file 319.1–2; Interv, Maxwell, 11 May 50, file 000.71. Both in HUMEDS, RG 112, NARA.

took care of Marine and Navy casualties from Guadalcanal and New Georgia. Army patients used Navy beds on Efate and Espiritu Santo in 1942 and 1943.

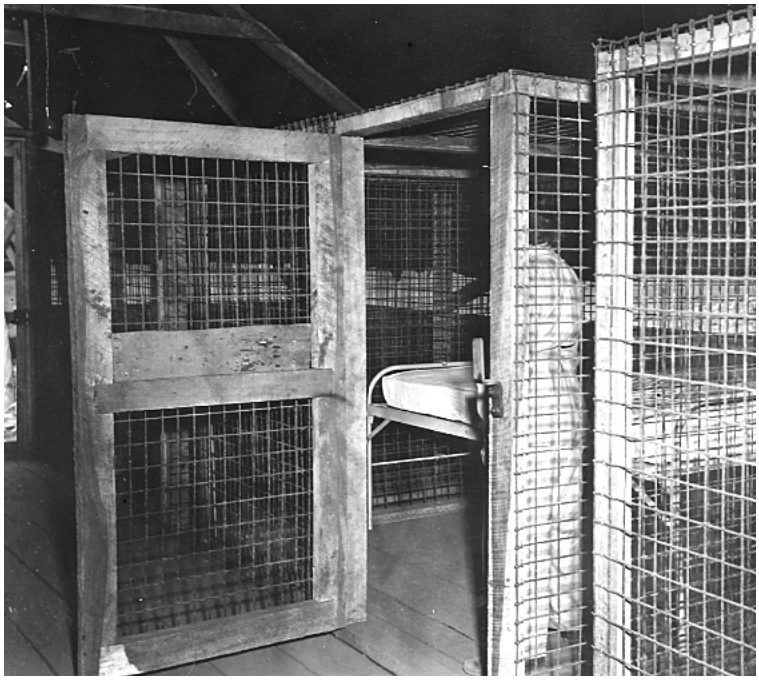
However, the services shared only mutual ignorance in treating tropical ills. The endemic diseases of New Zealand resembled those of the Middle Atlantic states at home, but the diseases of the jungled islands were largely unfamiliar to most American physicians, the more so because multiple infections were common and the symptoms of malaria—usually a component of such conditions—were varied and confusing. Psychological problems mingled with the physical. Psychiatrists quickly learned that the proportion of neuropsychiatric cases in isolated garrisons exceeded those resulting from combat. Already inclined to depression by the poor living conditions of the tropics (oppressive heat, monotony, poor food, and the pervasive strangeness of the environment), those who fell ill found no encouragement in the fact that their doctors seemed to know little about what ailed them. Unlike the sailors, the soldiers and marines who lived and fought ashore had a high rate of sickness. In 1943 the Army hospitals of the South Pacific Area counted almost 152,000 admissions, 60,000 of them malaria cases. About 23,000 casualties were evacuated to the United States, and of these more than 28 percent were diagnosed with neuropsychiatric disorders.[50]

To bear this burden while treating the combat casualties, Maxwell lacked skilled hands as well as beds. As of October 1943 the difference between table of organization requirements and the number of personnel actually on hand in the theater amounted to 586 officers and nurses and 2,684 enlisted men. Shortages of physician specialists (psychiatrists, in particular), of dieticians, and of physical therapists were marked, and the South Pacific was without professional consultants until July 1943, because theater headquarters was reluctant to approve the transfer of officers for purely professional reasons. Many doctors who bore excellent professional credentials had been inadequately trained for dealing either with the dangers of combat or the complexities of Army administration. The physician ultimately appointed, medical consultant Lt. Col. Benjamin M. Baker, MC, candidly termed himself "poorly prepared to meet many of the problems that confronted him," a condition apparently widespread in the South Pacific Area during 1942 and 1943.[51]

Geography interacted with Army personnel practices to make the medical service less effective than it might have been. The professional experiences of doctors varied widely, and the lack of a system able to distinguish among medical specialties made proper assignment difficult. Even when headquarters ordered reassignments, island commanders fought to retain skilled men,

[50]Baker, "South Pacific Area," in Havens, ed., *Activities of Medical Consultants*, p. 598; Lindsay E. Beaton and M. Ralph Kaufman, "As We Remember It," in Albert J. Glass, ed., *Overseas Theaters*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1973), p. 739.

[51]Quotation from Baker, "South Pacific Area," in Havens, ed., *Activities of Medical Consultants*, p. 576. See also CSurg, USAFISPA, Annual Rpt, 1943, p. 16, file 319.1–2; OofSurg, USAFISPA, ETMD, 4 Nov 43, p. 2, file 350.05; Kelly, "History of Nursing Service," pp. 14–16, file 314.7 (South Pacific); Interv, Potts, 6 Apr 45, file 000.71. All in HUMEDS, RG 112, NARA.



STOCKADES FOR NEUROPSYCHIATRIC CASES, *at a station hospital and on an Australian hospital ship*



whether needed or not. Hence, one hospital with a mediocre staff might struggle under a deluge of patients, while another wasted its professional talent on an island where little demand for its services existed. Colonel Baker cited the 7th Evacuation Hospital, a 750-bed unit affiliated with New York's Post-Graduate Hospital that was rich in surgical talent. On Tongatabu, a small coral island of Polynesia, its surgeons were often idle (treating superficial infections caused by insect bites was the hospital's most common activity), while fighting forces on distant Guadalcanal were critically short of such men. Moved to Fiji, the 7th became largely a malaria hospital, and later on Guadalcanal—by then securely in Allied hands—it waited to take part in an operation that was abandoned. Not until January 1945, at the invasion of Luzon, did the hospital at last serve the purpose for which it was intended. And Baker cited other cases of misused resources, especially distressing in a fighting theater where the medical system was stretched thin.[52]

Medical supply also had to provide support for combat troops and garrison forces on numerous islands that were spread over a vast area. In November 1942 Maxwell, in his capacity as USASOS chief surgeon, established a base depot at Noumea. Here he could oversee the collection of supplies for combat operations. To support garrison forces, Maxwell established small independent depots on the other occupied islands, which, resupplied by standard medical maintenance units, maintained supply levels equal to 100–200 days' usage. He requisitioned some supplies from the USAFISPA, but shortages necessitated much swapping and sharing with the Navy. Shortages in essential drugs—sulfaguanidine, bismuth, opium, and antimalarials—as well as in oxygen and plasma plagued the system during 1942, and all types of specialized equipment from microscopes to dental supplies were in short supply and badly needed. A scarcity of shipping often kept materiel on the docks in San Francisco, and a dearth of intratheater ships often prevented the marriage of personnel to equipment that arrived on different vessels at different ports. Shipping uncertainties pointed up the importance of air in medical supply, and the theater's need for a central depot to store excess supplies and to provide replacements for the local depots, which were apt to be suddenly depleted when units lost their equipment to enemy action.[53]

Preparing for War

Compared to the Southwest Pacific Area, the South Pacific Area presented a medical picture of a better integrated theater of operations, even with its geographical fragmentation and the administrative confusion resulting from the jumbled presence of Navy, Army, Marine Corps, island, and service commands. However, localism may also have encour-

[52]7th Evac Hosp Annual Rpt, 1943, exh. 2, p. 17, file 319.1–2, HUMEDS, RG 112, NARA; Baker, "South Pacific Area," in Havens, ed., *Activities of Medical Consultants*, p. 573. Baker notes (p. 575) that he was never officially named as medical consultant, but that he served in this capacity through most of the war.

[53]Whitehill, "Medical Activities in Middle Pacific," block 3, p. 82, file 314.7; CSurg, USAFISPA, Annual Rpt, 1942, pp. 1–3, file 319.1–2. Both in HUMEDS, RG 112, NARA. See also Charles M. Wiltse, *Medical Supply in World War II*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1968), pp. 422–26.

aged experimentation by officers with initiative, trying out new ideas in their own units. Thus important innovations were made by the 101st Medical Regiment, an organizational fossil that had escaped triangularization to become a part of the Americal Division in March 1942.

An element of the original Task Force 6184 assembled and sent to New Caledonia early in 1942, the 101st Medical Regiment, commanded by Lt. Col. Dale G. Friend, MC, had been inducted into federal service in January 1941 with the National Guard's 26th Division. All was in confusion as the regiment embarked on the Army transport *Santa Elena* at the New York Port of Embarkation. Medical materiel was on board, but no one knew where; units were mixed together, and officers had trouble locating their men. The convoy left New York on the twenty-third and, after a voyage devoted by the medics to training, to digging through holds to find supplies, and to conducting courses in tropical medicine, reached Melbourne, Australia, on 27 February. While stevedores reloaded the ships, the regiment was billeted in private homes; then it shipped out again on an "utterly filthy" vessel, where an epidemic of dysentery broke out. With "morale and physical condition . . . seriously impaired," the 101st landed at Noumea on the morning of 15 March.[54]

Here the 101st Medical Regiment underwent a period of initiation much like that of the hospitals, working in torrential rains, in mud that resembled "heavy gear grease," and in clouds of mosquitoes (the campsite was dubbed "Mosquito Hill"). Dysentery continued to rage; drinkable water had to be hauled from 6 miles away; and no vehicles were available to move the regiment's 300,000 pounds of equipment 5.5 miles from Noumea to the bivouac. Slowly, trucks were scrounged, the camp was organized, and the real business—learning to defend New Caledonia from Japanese attack—got under way. Because their brassard was not respected by the enemy, the medics armed themselves with Model 1903 bolt-action rifles and began learning to shoot under the guidance of infantry-trained NCOs and Medical Administrative Corps officers. An initial defense plan for New Caledonia recommended that strongpoints be created all along the coast for local resistance to any enemy landing. A few hundred American infantrymen and a small detachment of Australian commandos formed sixteen to eighteen defensive units, and the medics' first task was to provide them support.[55]

Friend split the personnel of a collecting and an ambulance company into 25-man groups, each commanded by a medical officer, with sufficient supplies and transport to provide first-echelon care and evacuation to hospitals. Since no hospital units had yet reached the island, he substituted his own, dividing the 101st's clearing companies into six field hospitals—he used the term generically, not in the sense of the regulation field hospital unit—placed at strategic locations to furnish second- and third-echelon care. Finally, the 101st commander set up in Noumea what he called "a complete field hospital," operated by a clearing company platoon, to render what

[54]Surg, 101st Med Regt, ETMD [Annual Rpt], 1942, pp. 2–3, file 319.1–2, HUMEDS, RG 112, NARA. Though called an ETMD, this document is actually the unit's annual report and is so filed.

[55]Ibid., p. 3, file 319.1–2, HUMEDS, RG 112, NARA.

amounted to station hospital services for the troops in the area. The weak point of his plan was the lack of transport, worsened by New Caledonia's poor roadnet. Because the sick and injured could not be moved without great difficulty and loss of time, the little hospitals in the field performed a wide range of services, including major surgery to stabilize casualties so that they could endure "the long, hard ride over extremely bad roads." Where no roads at all existed, long litter hauls over mountain trails toughened the bearers and familiarized them with life in the jungle.[56]

As they trained, the 101st's medics, in effect, were readying themselves for the conditions of warfare in the South Pacific. They lived with the infantry and practiced commando tactics with the Australians. Doctors and corpsmen alike learned to perform operations under the conditions of the bush. Supply section personnel acquired the physical strength and knowhow to move materiel over 20,000 square miles of wilderness and mountains.

After the Americal Division was formed in May, the 101st continued as a regiment, with added strength that it would not have possessed if it had been reorganized as a medical battalion. At the same time, General Patch revised his defense plan around the airports and strategic landing areas, creating seven defense areas with a field hospital and collecting and ambulance personnel assigned to each. Friend seized the opportunity to ensure that, when not otherwise engaged, the collecting and ambulance personnel assisted in the operation of the hospital and received training in nursing and surgical care, advancing further the self-sufficiency of his small autonomous units.

Finally, as combat approached and the division was reorganized into three regimental combat teams (RCTs), the 101st Medical Regiment went through a third change. Friend organized three units, which he called "provisional vertical battalions," to support the RCTs. Each possessed its own headquarters and headquarters detachments; a supply detachment; one collecting company of 100 men, 5 ambulances, and 2 jeeps; and one provisional clearing company, equipped with steel beds, surgical gear, and an X-ray machine. So equipped, it could, Friend felt, function as a complete field hospital. In this form, the first battalion embarked for Guadalcanal on 2 November and, ten days later, entered combat in support of the 182d Regimental Combat Team.[57]

Friend's provisional battalions were his own answer to the same problem that had led Carroll in Southwest Pacific Area to devise the portable surgical hospital. The outlook of the two innovators was quite different. Friend declared that his battalions plus readily available air and sea evacuation made "the presence of surgical and evacuation hospitals unnecessary." Yet he arrived at his conclusion by logic very similar to Carroll's: "It is believed essential that all hospitals used in the type of warfare experienced here . . . [must] be field equipped, mobile, and be capable of operating close to the lines of combat. . . . It is believed essential to give good, complete treatment as soon as possible after wounds have been received and to prepare patients adequately for air and

[56]Ibid., p. 5, file 319.1–2, HUMEDS, RG 112, NARA.

[57]Ibid., encl. 2, p. 2, file 319.1–2, HUMEDS, RG 112, NARA.

water evacuation." Maxwell agreed: "The chief problem in island warfare," he declared, "is to obtain definitive surgery at the front."[58]

The experiences of 1942 brought into being a rough and ready organization in the South Pacific Area, armed with an innovative spirit and ideas of real merit about interservice cooperation, hospital construction, and forward medical support. In a variety of ways, a medical organization intended to support mass armies in land campaigns had been adapted to the exigencies of island war—how successfully, would now be determined in battle.

[58]First two quotations from ibid., encl. 6, p. 2. Third quotation from CSurg, USAFISPA, Annual Rpt, 1943, p. 14. Both file 319.1–2, HUMEDS, RG 112, NARA.

CHAPTER IV

Jungle Warfare

In January 1942 the Japanese, moving southeast toward the American-Australian line of communications, had captured the harbor of Rabaul on the northeast coast of New Britain Island in the Bismarck Archipelago. Entering the Solomon Islands, they took Tulagi in May and thereafter planned the seizure of Port Moresby on New Guinea's south coast. Their advances threatened Australia, separated from New Guinea only by the Torres Strait, and provoked Allied counteraction. The struggle to halt Japan opened with an inconclusive naval battle in the Coral Sea, which turned into a war of attrition on land, sea, and in the air. Geography made it a logistical nightmare, and climate and disease harassed the contending armies.

On 2 July, in order to dislodge the Japanese from New Guinea, the Bismarcks, and the Solomons, the U.S. Joint Chiefs of Staff ordered a two-pronged counterattack. One offensive was to move up the Solomon chain and the other toward northern New Guinea from Port Moresby, with the recapture of Rabaul, the heavily defended main Japanese base, as the final objective. For both the Army Medical Department and the theater medical service, the projected operations meant their first experience in supporting attacks on Japanese-held islands in the South and Southwest Pacific Areas and a long, exhausting encounter with jungle warfare at its worst.

Guadalcanal

Overall direction of the initial campaign against Tulagi and "adjacent positions" rested in the hands of Admiral Nimitz, who assigned it to Admiral Ghormley. On Guadalcanal, where the Japanese had begun to build an airstrip, the landing force was to consist of the 1st Marine Division. Army forces were to relieve the marines at a later date. The Navy was to support the campaign, and its construction battalions were to build or expand air bases ashore for Army and Navy aircraft.[1]

Ghormley and his successor, Admiral Halsey, consulted General Harmon, the USAFISPA commander, in the design and execution of the campaign, particularly in the preparation and execution of plans involving Army forces. Though Harmon was to have no operational control over those forces, the Navy

[1]John Miller, jr., *Guadalcanal: The First Offensive*, United States Army in World War II (Washington, D.C.: Historical Division, United States Army, 1949), pp. 1–21 (quotation, p. 17).

would later delegate authority to him over specific operations and for limited amounts of time, making him much more powerful than had originally been intended. From the first, however, Harmon was responsible for the administration, training, and logistical support of all Army ground and air forces that were to participate in the Guadalcanal campaign. Captain Dearing, Admiral Halsey's chief surgeon, planned medical support for 18,134 marines, whose infantry regiments had been organized into battalion landing teams for the invasion.[2]

Providing medical support for Army forces participating in the Guadalcanal campaign and coordinating that support with the Navy were the responsibilities of Colonel Maxwell. His duties as both the theater chief surgeon and USASOS surgeon included providing for the personnel necessary to support Army forces; gathering information about the diseases, climate, and terrain on Guadalcanal; requisitioning medical supplies through General Breene's USASOS headquarters; storing and readying, at the depot on New Caledonia, the supplies to be shipped on troopships and aircraft to the combat zone; and supervising a program for training medics, with the divisions they were to support, in jungle and island warfare.

Training was essential, for Guadalcanal was not a picturesque South Pacific island paradise. Ninety miles in length and about 30 in width, the volcanic island possessed jungled mountains, a hot, wet climate with temperatures ranging between 70° and 95° F., and a monsoon season that lasted from November to March. Flat coastal plains, covered with cocoanut palms or thick jungle, rose gradually to grassy plateaus. Split by deep jungle-choked ravines, the plateaus merged into precipitous mountains, all thickly forested. On that "pestilential hellhole hated by soldier, sailor and marine," two-thirds of the U.S. forces became ill, and almost two-thirds of the Japanese who died apparently succumbed to disease.[3]

Invasion and Battle

On 7 August the 1st Marine Division under Maj. Gen. Alexander A. Vandegrift, USMC, invaded Guadalcanal, aiming to seize the island and its partially completed airfield. Landing without opposition, by the next day the marines had taken the airstrip, renamed it Henderson Field, and established a defensive perimeter around it. But attacks from Japanese bombers out of Rabaul caused the American fleet to sail away, leaving the marines without naval or air support and with only meager supplies. Reinforcements and supplies had to be brought in by blockade-running ships and by air transport.

Both Japanese and Americans began to reinforce Guadalcanal. The marines

[2]Louis Morton, *Strategy and Command: The First Two Years*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1962), p. 261.

[3]Quotation from Jack Coggins, *The Campaign for Guadalcanal: A Battle That Made History* (Garden City, N.Y.: Doubleday and Co., 1972), p. 28. See also Surg, 101st Med Regt, ETMD [Annual Rpt], 1942, encl. 5, p. 1, file 319.1–2, Historical Unit Medical Detachment (HUMEDS), Record Group (RG) 112, National Archives and Records Administration (NARA), Washington, D.C. Though called an ETMD, this document is actually the unit's annual report and is so filed. Richard B. Frank's *Guadalcanal: The Definitive Account of a Landmark Battle* (New York: Random House, 1990) is a recent and excellent retelling of the battle, with a broad range of sources, including Japanese sources.

fought off attacks against Henderson Field, while naval and air forces struggled for control of the Solomon waters. On 13 October the first Army unit—the 164th Infantry of the Americal Division—arrived from New Caledonia. By this time the 1st Marine Division, weakened by an inadequate diet, was beginning to suffer the ravages of tropical disease, including malaria, skin infections, and gastrointestinal disorders. During October malaria alone put 1,960 marines into the hospital.[4]

In early November Nimitz ordered the remainder of the Americal Division to Guadalcanal, where the battle was entering its final phase. Midmonth naval and air successes halted attempts by the Japanese to reinforce their troops, and desperate enemy attacks against the perimeter failed. Marines and soldiers now sallied from the defensive perimeter to attack the Japanese in the northwestern end of the island. The struggle quickly developed into a kind of Bataan in reverse, as a stubborn enemy, cut off from his supplies, resisted final defeat.

As in that earlier battle, the defense was tenacious and the battleground—for the most part, a series of steep ridges rising from the coast to the central mountains—well adapted to prolonged resistance. Green troops made slow progress; some collapsed from exhaustion. The Japanese covered the entire front with small arms, automatic weapons, artillery, and mortars. The Americans were not able to gain ground, and casualties mounted until headquarters stopped the advance on 25 November. By this time the 164th Infantry numbered less than 200 effectives; between the nineteenth and twenty-fifth the unit suffered 117 killed and 625 wounded or sick. Medics evacuated more than 300 from the island and sent another 300 to rear areas for treatment of wounds, malaria, dysentery, or combat fatigue. The malaria rate for Allied troops on Guadalcanal reached 1,781 per 1,000 per year in November, the month when malaria control personnel at last arrived on the island.[5]

The Joint Chiefs now ordered the 25th Infantry Division, stationed on Hawaii, to Guadalcanal to relieve the marines. Harassed for months by air raids, naval attack, inadequate diet, malaria, and dysentery, the 1st Marine Division had taken 10,635 casualties up to 10 December. Only 1,472 suffered gunshot wounds, while malaria accounted for 5,749. Malnutrition and disease had weakened many others as well. On the ninth General Patch of the Americal Division succeeded General Vandegrift as commander of U.S. forces on Guadalcanal, including the 2d Marine Division, and the Army assumed responsibility for the conclusion of the campaign. The troops were fortunate in facing an outnumbered enemy ravaged by disease, living on inadequate rations, and, in a few instances, reduced to cannibalism.

After sharp preliminary fighting, on 10 January 1943 the last offensive began.

[4]For background, see Miller, *Guadalcanal*, pp. 59–196. See also Francis D. Cronin, *Under the Southern Cross: The Saga of the Americal Division* (Washington, D.C.: Combat Forces Press, 1951). The 164th Infantry was supported by Navy medics until Army medical units arrived.

[5]Miller, *Guadalcanal*, pp. 173–89, 203–09, 226–27; 121st Medical Bn Unit History (copy), [1942–43], pp. 5–8, file 300-Med-0.1, HUMEDS, RG 112, NARA. Under the process of triangularization, the 101st Medical Regiment was reorganized as the 121st Medical Battalion on 1 May 1943, when the Guadalcanal campaign was over.

The push aimed northwestward, with Cape Esperance at the northwestern tip of the island as its goal. The enemy put up strong resistance, but continuous American pressure, coupled with the successful naval blockade, forced many Japanese to flee Guadalcanal. The remainder, though starving and diseased, skillfully withdrew to areas around Cape Esperance, completing their evacuation during the night of 7–8 February. The next day, however, a final attack brought the campaign to a close as Cape Esperance fell.[6]

The campaign had been exceptionally bloody. Of the more than 37,000 Japanese who fought on Guadalcanal, 14,800 were dead or missing. The 60,000 Army and Marine ground forces suffered less, both absolutely and proportionately. Yet casualties included 1,702 killed (1,152 marines and 550 soldiers) and 4,088 wounded (2,799 marines and 1,289 soldiers). Thousands more U.S. forces suffered from disease. Quinine was not an effective prophylactic in heavily infected men, and Atabrine had not been standardized. Vector control and the use of headnets were impossible in combat, and repellants were worthless. Of the soldiers put out of action on Guadalcanal, nearly 65 percent were victims of disease and only 25 percent of wounds.[7]

Medical Support

To drive the enemy off Guadalcanal, U.S. troops had to seek out and dislodge him from well-fortified positions on ridges and in ravines, hacking out trails through tangled jungle as they advanced. Evacuating the wounded was a tedious and exhausting task. Because the rugged terrain slowed the transport of supplies to the front, aid stations stocked extra plasma and surgical instruments. Since bearers had to rest after one or two carries, the litter squads, reinforced by infantrymen, hauled casualties to battalion aid stations located only 100 yards behind the front. Working in dugouts roofed by shelter tents, medics applied sulfonamides to wounds, arrested hemorrhage, splinted fractures, and treated shock with blankets and plasma.

Then, in oppressive heat or rain, through jungle and across ravines, medics carried the wounded on litters or piggyback to forward collecting stations, located 1,000 yards to the rear. Just to evacuate a single casualty often required litter hauls of several hours by a number of relay teams. Medics reinforced Navy-issue Stokes litters with planks; to cross ravines, they hoisted them on steel cables strung by the engineers or, using ropes, slid them down muddy slopes like toboggans. Sometimes hospital corpsmen formed a human chain to pull the walking wounded uphill. Despite such improvisations, the steep ridges exhaust-

[6]Arthur H. Thompson, "Operation of the Division Medical Battalion," in "Operations of the 25th Infantry Division, 17 December 1942–5 February 1943" (copy), sec. 5, pp. 160–61, file 370 SWPA (Guadalcanal), HUMEDS, RG 112, NARA; Miller, *Guadalcanal*, pp. 212, 229–300, 348–49. The Japanese contrived to evacuate some 13,000 men by destroyers at night.

[7]Miller, *Guadalcanal*, pp. 227, 350; Frank O. Hough, Verle E. Ludwig, and Henry I. Shaw, Jr., *Pearl Harbor to Guadalcanal*, History of U.S. Marine Corps Operations in World War II (Washington, D.C.: Historical Branch, G–3 Division, Headquarters, U.S. Marine Corps, 1958), p. 374. A staff study prepared in 1944 counted much heavier casualties, estimating that only about 12,000 of 33,600 escaped, for a total loss of about 65 percent. See Historical Section, G–2, Far East Command, "*17th Army* Operations," Japanese Studies in World War II, 2:49, bound as Japanese Monograph No. 35, "Southeast Area Operations Record, Volume 2, February 1943–August 1945," Ms 8–5.1 AC 35, U.S. Army Center of Military History, Washington, D.C.

ed the bearers so quickly that infantrymen had to augment the squads, enlarging them from the usual four to six, eight, and even twelve. After the 2d Battalion, 132d Infantry, Americal Division, took a hill on 2 January, 175 litter-bearers took five hours to evacuate its 20 casualties. To protect bearers from sniper and machine gun fire, 1 noncommissioned officer and 3 enlisted men, armed with submachine guns and a rifle, accompanied each squad. As Colonel Maxwell wrote, "The work of the bearer squads to date has been superhuman and no praise of their efforts could be excessive."[8]

Collecting stations were commonly set up in bunkers that were covered with cocoanut logs, sandbags and dirt—or, during an advance, in the open, under forest cover. Here medical personnel prepared casualties for evacuation by jeep, boat, or litter to ambulance loading points at rear collecting stations that stood under canvas about 2.5 miles behind the aid stations. Additional emergency care—mostly plasma and shots of morphine—was provided at the rear stations, and then any available transportation took the casualties to field hospitals, also under canvas, about 3 miles to the rear.[9]

Col. Dale G. Friend's 101st Medical Regiment discovered, however, that jungle trails could sometimes be bypassed. On the waterways—the Matanikau River or smaller streams—ambulance section



LITTER-BEARERS NEGOTIATING A STEEP SLOPE

personnel paddled rubber boats, each with 2 litter or 6 sitting casualties. Manned by collecting station personnel, evacuation craft carried plasma, morphine, dressings, and splints. Sometimes captured Japanese assault boats—collapsible wooden craft fitted with outboard motors—towed the rubber boats to their destinations. Running along the coast, Navy tank lighters, flying boats, and motor torpedo boats evacuated many casualties from otherwise inaccessible locations. After debarking, ambulances took them to division hospitals in the Lunga area, near the airfield. The jeep proved its value as an ambulance, enabling evacuation from aid and col-

[8]Rpt, CSurg, USAFISPA, to SG, U.S. Army, 7 Dec 42, p. 5 (quotation), Encl to CSurg, USAFISPA, Annual Rpt, 1942; Surg, 101st Med Regt, ETMD [Annual Rpt], 1942, encl. 2, pp. 3–4. Both file 319.1–2, HUMEDS, RG 112, NARA.

[9]Buell Whitehill, "Administrative History of Medical Activities in the Middle Pacific," block 8, pp. 111–12, file 314.7, HUMEDS, RG 112, NARA.

lecting stations wherever some semblance of a road existed. Mechanics of the 101st Medical Regiment modified the jeep with a clip-on frame to carry 1 sitting and 3 litter casualties, plus the driver and an orderly armed with a submachine gun.[10]

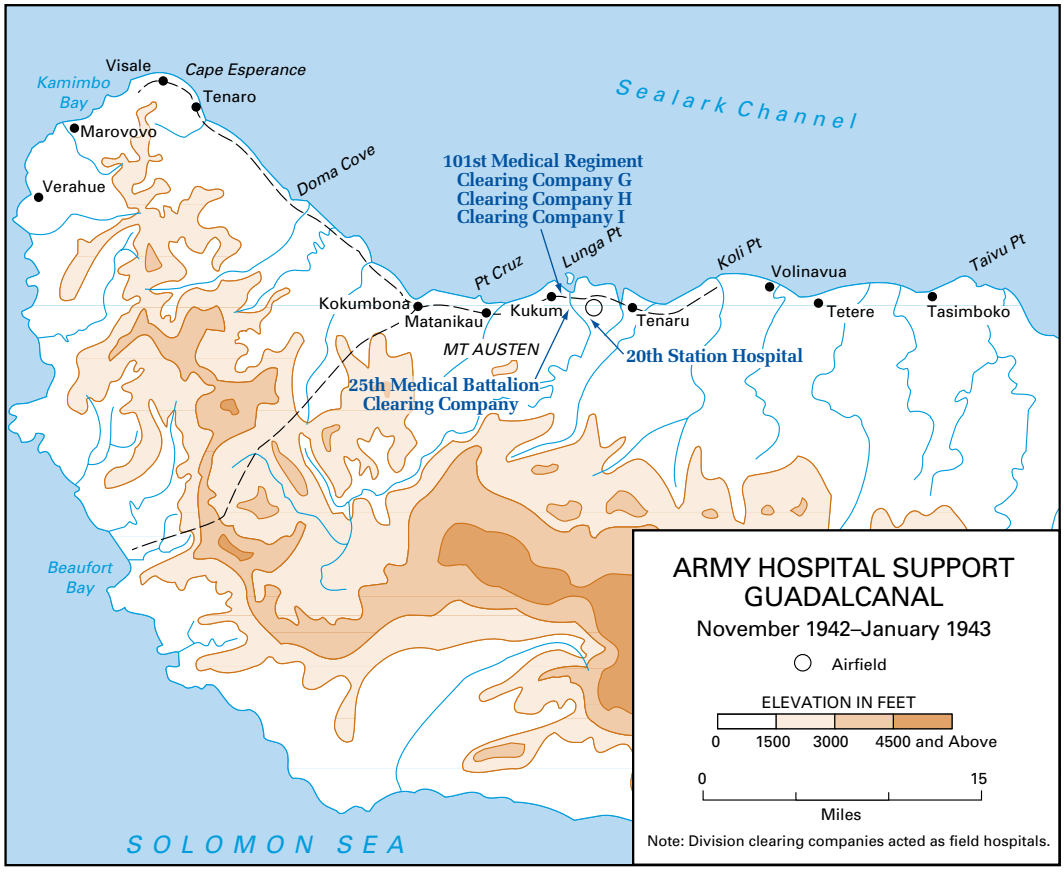
The weary litter-bearers with their suffering casualties made their way to hospitals, which on Guadalcanal were and remained few. During the first four weeks of Army activity, a Navy hospital took care of the 164th Infantry. Then the Americal Division's wounded were treated by the three reinforced clearing companies of the 101st Medical Regiment. During the intense fighting of late November and early December Clearing Company H, later designated as Field Hospital II, was attached to the Americal Division's 182d Infantry. As the only hospital apart from a small naval facility present in the combat area, its personnel performed tasks, including surgery, that usually were done by larger, better equipped, and better manned installations. From 15 November 1942 to 28 February 1943 this small group of 6 medical officers, 2 dental officers, and less than 100 enlisted men, treated a total of 3,719 casualties, besides donating much of the blood that was given to the wounded. In early December 1942 Clearing Company G took over a Navy hospital, with 80 Marine and Army patients, to establish Field Hospital I. A surgical hospital with separate wards for POWs—victims of malaria, vitamin deficiency, and extreme starvation—the facility treated more than 2,200 patients in all. On the fifteenth Clearing Company I established the Field Hospital III near Lunga Beach (*Map 5*). Farthest from the front line, it became primarily a medical and psychiatric installation, treating approximately 3,800 patients, of whom more than 3,600 were victims of disease.[11]



MOVING CASUALTIES UNDER GUARD

[10]Surg, 101st Med Regt, ETMD [Annual Rpt], 1942, encl. 2, pp. 3–5, and encl. 3, p. 1, file 319.1–2; 121st Medical Bn Unit History (copy), [1942–43], p. 8, file 300-Med-0.1; Thompson, "Division Medical Battalion," in "25th Infantry Division" (copy), sec. 5, pp. 160–61, file 370 SWPA (Guadalcanal). All in HUMEDS, RG 112, NARA. See also Department of the Navy, Bureau of Medicine and Surgery, "The United States Navy Medical Department at War, 1941–1945," 1:73–74, files of Bureau of Medicine and Surgery Archives, Washington, D.C.

[11]Surg, 101st Med Regt, ETMD [Annual Rpt], 1942, encl. 2, p. 3, file 319.1–2; 121st Med Bn Unit History (copy), [1942–43], pp. 6–7, 11–13, file 300-Med-0.1. Both in HUMEDS, RG 112, NARA. See also the Army's *Medical Service in Joint Overseas Operations, Field Manual 8–25* (1940).



MAP 5

The disproportion between casualty load and bed strength became even more marked when the 25th Division entered the battle in early January 1943. The 25th Medical Battalion's two-platoon clearing company set up a forward and a rear hospital, with a total of 250 beds. Soon both were overwhelmed by casualties. By the twenty-sixth they held 432 patients, and the daily admission rate reached 100. At the end of the campaign Lt. Col. Arthur H. Thompson, MC, the medical battalion commander, reported that the division would have benefited from corps or Army hospitalization, since "the clearing company of a medical battalion was not designed nor equipped to furnish semi-permanent hospitalization for divisional casualties." The arrival on the sixteenth of the 250-bed 20th Station Hospital offered only partial relief. The hospital received wounded directly from the front line or from the clearing companies of the Americal and 25th Divisions. Its staff dug shelters to protect the casualties from enemy night shelling. Because there were too many to handle, early air and sea evacuation—far easier once the Navy established control of the

waters around Guadalcanal—became the norm.[12]

Largely determined by the shortage of beds, evacuation policy depleted the forces on the island. Since the sick and wounded could be kept for only seventy-two hours, those with slight injuries or minor fevers who could have remained on Guadalcanal and been returned to their units were instead evacuated to New Caledonia, the New Hebrides, New Zealand, or Fiji. Ships—usually attack transports with small hospitals, staffed by Navy medical personnel—and Navy transport planes took casualties off the island. Air evacuation, begun as soon as the marines captured Henderson Field, increased steadily until the end of the campaign. At first, one Army and two Marine troop carrier squadrons of the South Pacific Combat Air Transport Service flew in gasoline, ammunition, and supplies to the isolated troops and returned with a load of casualties. In September Navy medical corpsmen were assigned to each plane and Navy flight surgeons to accompany the seriously wounded. Transport planes carried an average of 20 evacuees per trip, or up to 80 a day, to the Navy hospitals on Espiritu Santo or Efate. From there, Navy aircraft or ships took them to New Caledonia, Fiji, or New Zealand.

Medical personnel preferred air to sea, for evacuation by ship entailed many transfers of the wounded, from ambulance to lighter, and from lighter to ocean craft. Journeys were long: two to three days by ship, compared to four hours by air, to cross the 600 miles from Guadalcanal to Espiritu Santo; and four to five days, compared to six or seven hours by air, to cross the 950 miles from Guadalcanal to New Caledonia. By the end of the campaign 7,000 casualties had been evacuated from Guadalcanal by air.[13]

Air transport also played a prominent role in medical supply. Beginning when the marines captured Henderson Field, Army and Navy planes flew in supplies from the base depot on New Caledonia. The supply section of the 101st Medical Regiment, responsible for the Americal Division and certain Navy and Marine personnel, moved materiel forward over evacuation routes, using the same ambulances, jeeps, litter-bearers, and boats on the Matanikau River that brought the wounded to the rear. Though excesses developed in some items, the many casualties on Guadalcanal produced shortages, especially of blood plasma, intravenous fluids, morphine syrettes, and antidiarrheal drugs.

The free use of the same aircraft to bring supplies in and to ferry casualties out emerged as a crucial asset in dealing with the immense distances of the South Pacific Area. Although the use of ordinary military aircraft entailed some danger to the wounded, who traveled without the protection that dedicated and plainly marked medical evacuation air-

[12]Thompson, "Division Medical Battalion," in "25th Infantry Division" (copy), sec. 5, p. 163 (quotation), file 370 SWPA (Guadalcanal); 121st Med Bn Unit History (copy), [1942–43], p. 6, file 300-Med-0.1; Rpt, Lt Col Arthur G. King, Med Insp, OofSurg, Americal Div, to CG, Americal Div, 15 Oct 42, sub: Intelligence Report on Cactus (Guadalcanal), pp. 3–4, file 350.05. All in HUMEDS, RG 112, NARA.

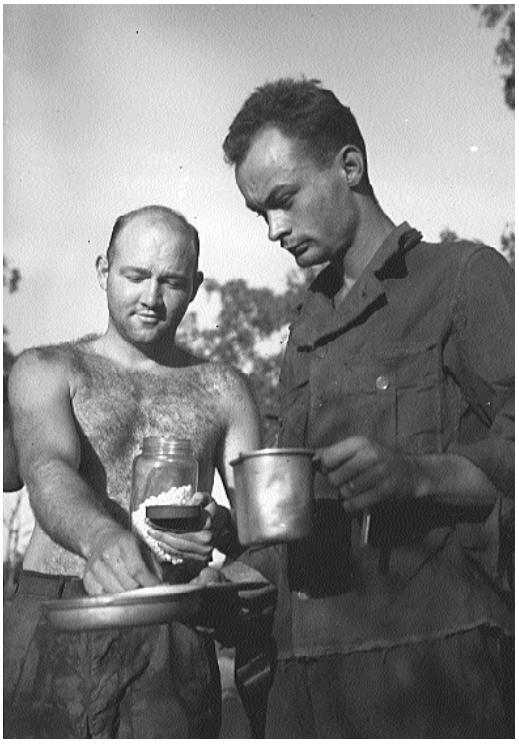
[13]Interv, Lt Col Leon K. Gurjian, 20 Aug 43, file 000.71; Whitehill, "Medical Activities in Middle Pacific," block 8, pp. 43–44, file 314.7; Air Evacuation Board, SWPA, "The Medical Support of Air Warfare in South and Southwest Pacific, 7 December 1941–15 August 1945," Report No. 35, sec. 1, vol. 2, pt. 2, pp. 477–78, 483, file 314.7–2 (Army Air Forces—Medical Services) SPA, SWPA. All in HUMEDS, RG 112, NARA.

craft might have afforded, trips out of Guadalcanal became safer as the Allies established control of the air. Both coming and going, military air transport served the wounded well.[14]

Disease and Stress

For the first three months of the campaign, the environment and the desperate military situation combined with a lack of understanding on the part of responsible officers to make control of malaria impossible on Guadalcanal. Malaria discipline was poor in both U.S. and enemy units. Topography helped to spread the disease. The American forces occupied a flat alluvial plain of undrainable clay soil, cut by streams and spotted with lagoons. They dug foxholes, and heavy vehicles made myriad ruts that filled with each rainstorm, multiplying mosquito breeding areas. Native laborers, who were heavily seeded with malaria parasites, carried the disease into the American perimeter. As soldiers and marines advanced, they entered areas with a large population of malaria-carrying *Anopheles* mosquitoes. Falciparum malaria was common, and potentially fatal.[15]

Part of the problem among American troops resulted from the introduction of the new synthetic antimalarial Atabrine. Though the drug was more effective than quinine in suppressing the symptoms of malaria, the original recommended dose—.2 grams a day, twice a week—made 20 percent of the Americal Division, including General Patch, ill with nausea, vomiting, and headaches. A rush for quinine resulted, but short supplies meant that the drug could not be issued for prophylactic purposes. When the Atabrine dose was reduced to .05 grams a day, however, almost everyone, including the commanding general, was able to tolerate it.



TAKING QUININE TABLETS

Yet many soldiers remained suspicious of the drug. Stories spread that the tablets were poisonous or caused impotence. In fact, Atabrine like quinine was somewhat toxic, and excessively so to a few individuals. Some deliberately avoided prophylaxis, hoping to catch malaria as a means of being evacuated. To see

[14]Surg, 101st Med Regt, ETMD [Annual Rpt], 1942, encl. 2, pp. 3–6, file 319.1–2, HUMEDS, RG 112, NARA; Miller, *Guadalcanal*, pp. 240, 431.

[15]Paul A. Harper et al., "New Hebrides, Solomon Islands, Saint Matthias Group, and Ryukyu Islands," in Ebbe Curtis Hoff, ed., *Communicable Diseases: Malaria*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963), pp. 404, 419, 425–27.

that tablets were swallowed, medics stood in mess lines and looked into mouths. However, the troops were obliged to go out on small patrols, interrupting such supervision, and frequent alerts required them to spend much time in foxholes, making mosquito nets ineffective as well.[16]

In order to improve malaria discipline, General Patch, on the advise of Colonel Friend, in January 1943 issued the Americal Division a memorandum, in which he pointed out that less than 1 in a 1,000 was unable to take Atabrine and that yellow discoloration of the skin disappeared within ten days after discontinuing the drug. Commanding officers were instructed to impress upon their subordinates the necessity of using mosquito nets and especially of covering the body at dusk and dawn, when mosquitoes are most prevalent. But by this time malaria had reached epidemic proportions. Ninety percent of the 1st Marine Division acquired the disease. The monthly malaria rate for Allied units ran as high as 1,781 per 1,000 troops per annum in November. From 1 November 1942 to 13 February 1943 hospital admissions for malaria from Army units alone averaged 420 per 1,000 troops per year. Malaria so depleted some units that General Vandegrift ordered doctors not to excuse soldiers with temperatures of 103° F. or less from frontline duty or patrol missions.[17]

Attempts to lessen the rising toll were made by both armed services. The Navy on 20 November 1942 established a base malaria control unit, consisting of two officers and eight enlisted men, to oil pools, to improve drainage, to help units choose healthful campsites, and to train 101st Medical Regiment technicians in diagnostic work. In mid-December Colonel Friend instituted a plan of action for the Americal Division, which included an all-out campaign to educate personnel in malaria control. He established Field Hospital III, a malaria facility of 400 beds staffed by medical officers and clearing company personnel, including trained technicians who provided laboratory diagnosis and classification of cases. Friend made treatment with suppressive Atabrine a command responsibility, and appointed a division malaria control officer to train two enlisted men of every company and battery in malaria control.[18]

But malaria discipline had been late in coming. In January 1943, when the final offensive was on, the admission rate for Allied units remained high, 1,169 per 1,000 troops per annum. Hence, the control program contributed little to the defeat of the Japanese. In the post-combat period, however, conditions on Guadalcanal

[16]When the Germans were unable to obtain quinine during World War I, they began to experiment with synthetic substitutes. Work continued after the war, and in 1930 they produced Atabrine. See Bennett F. Avery, ed., *The History of the Medical Department of the United States Navy in World War II*, 3 vols. (Washington, D.C.: Bureau of Medicine and Surgery, Department of the Navy, 1950–53), 1:73. See also Rpt, King to CG, Americal Div, 15 Oct 42, p. 6, file 350.05, and Surg, 101st Med Regt, ETMD [Annual Rpt], 1942, encl. 11, p. 2, file 319.1–2, HUMEDS, RG 112, NARA; Miller, *Guadalcanal*, p. 227; and Frank, *Guadalcanal*, pp. 259–60.

[17]Harper et al., "New Hebrides, Solomon Islands, Saint Matthias Group, and Ryukyu Islands," in Hoff, ed., *Communicable Diseases: Malaria*, pp. 422, 426; Miller, *Guadalcanal*, pp. 210, 227; Surg, 101st Med Regt, ETMD [Annual Rpt], 1942, encl. 11, p. 1, file 319.1–2, HUMEDS, RG 112, NARA.

[18]Harper et al., "New Hebrides, Solomon Islands, Saint Matthias Group, and Ryukyu Islands," in Hoff, ed., *Communicable Diseases: Malaria*, p. 426; Surg, 101st Med Regt, ETMD [Annual Rpt], 1942, encl. 11, pp. 1–2, file 319.1–2, HUMEDS, RG 112, NARA.

noticeably improved. More Army malariologists came into the area and took over and expanded the control work. The malaria rate fell from 1,052 per 1,000 per annum in March to 149 in December (*see Table 2*). By then, large portions of Guadalcanal were *Anopheles*-free, and the command policy of administering suppressive Atabrine to the garrison was rescinded.[19]

Other problems were less important than malaria, but all added to the misery of the fighting men. Diarrhea afflicted almost all new arrivals on Guadalcanal, but soon disappeared after treatment with sulfadiazine or sulfaguanidine. In the hills, water was in short supply and the troops went unbathed for weeks at a time. Dirt plus heat, high humidity, and filthy clothing promoted fungus infections of the skin; athlete's foot was particularly common, as were epidermophytosis and tinea. Heavy perspiration depleted the body's fluids and salts, causing excessive fatigue, cramps, headaches, and vertigo; some suffered from mental confusion, and some passed out. Avitaminosis was common, apparently because field rations were so unappetizing that soldiers ate only the more palatable items, frustrating quartermaster efforts to provide a balanced diet. Weight loss was apparently about twenty pounds per man, on the average. Impressed by his experience with the effects of jungle warfare, Colonel Friend believed that troops should not serve more than ten days in continuous combat and should not remain in such an environment for more than four months because disease and lowered morale depleted combat efficiency.[20]

Psychological disorders, usually termed war neurosis or battle fatigue, accounted for a large percentage of evacuees. Much of the problem resulted from the many pressures of combat—constant air attacks, the lack of sleep, the enemy's tactics of infiltration and night attack. Compounding such stresses were the Guadalcanal climate and environment. The profound jungle darkness, the unnerving night sounds of animals and birds, the tormenting attacks by insects and leeches, and the painful and distressing skin diseases all sapped the troops' energy and made them more susceptible to real and imaginary terrors.[21]

Medical personnel learned to look for impending psychological breaks and, when they spotted early symptoms, to secure the victims' release from duty before they jeopardized the lives of themselves and others. By the end of 1942 the 3d Field Hospital was treating neuropsychiatric (NP) patients as well as possible malingerers. Unit surgeons began to relearn—too late to prevent many evacuations—a lesson taught by World War I but since forgotten: The best way to handle cases of war neurosis was to hold them as close as possible to the front lines.[22]

"We believe," said a physician with the 182d Infantry, "that the majority of these cases are nothing but a direct result of

[19]Harper et al., "New Hebrides, Solomon Islands, Saint Matthias Group, and Ryukyu Islands," in Hoff, ed., *Communicable Diseases: Malaria*, p. 423.

[20]Surg, 101st Med Regt, ETMD [Annual Rpt], 1942, encl. 5, p. 3, file 319.1–2; Rpt, King to CG, Americal Div, 15 Oct 42, pp. 5–6, file 350.05. Both in HUMEDS, RG 112, NARA.

[21]Rpt, King to CG, Americal Div, 15 Oct 42, pp. 5–6, file 350.05; Interv, Maj Theodore Lidz, 26 Mar 45, file 000.71. Both in HUMEDS, RG 112, NARA.

[22]Interv, Lidz, 26 Mar 45, file 000.71, HUMEDS, RG 112, NARA.

TABLE 2—MALARIA ADMISSION RATE FOR ALLIED UNITS,[a] GUADALCANAL, 1943

Month	With Only Malaria	With Other Diseases
January		1,169
February		878
March		1,052
April		1,182
May		900
June	396	636
July	342	608
August	142	263
September	181	287
October	124	230
November	91	206
December	71	149

[a]Reflects the number of cases per annum per 1,000 troops.

Source: Adapted from Harper et al., "New Hebrides, Solomon Islands, Saint Matthias Group, and Ryukyu Islands," in Hoff, ed., *Communicable Diseases: Malaria*, p. 423.

exposure to the sun and the elements, lack of rest and sleep, mental tension . . . and mental and physical fatigue. Our experience showed that when these men were given one or two weeks rest, regular food, a chance for a bath and rest, and common sense psychotherapy was practiced, 85% to 90% . . . requested to be returned to their respective units."[23]

Guadalcanal contributed significantly to the development of combat psychiatry, partly because a psychiatrist, Maj. Martin A. Berezin, MC, for a time was acting surgeon of the Americal Division. Early on, the attitude of the line officers was, if possible, even less receptive to combat psychiatry than to malaria discipline. General Patch himself informed Berezin that "neuropsychiatric cases were a disgrace to the service, and he insisted that all cases should be court-martialed." When Berezin protested, Patch agreed to a compromise—treating enlisted NPs as medical cases but court-martialing officer NPs. In consequence, Berezin diagnosed such officers as victims of blast concussions and other organic injuries. Meanwhile, early complaints from unit commanders over removing NPs from the line gave way to attempts to have them evacuated, as their uselessness in combat became clear.[24]

Lacking almost all equipment for a psychotherapeutic program, Berezin gave barbiturate sedation and, after one

[23]Interv, Gurjian, 20 Aug 43, p. 3, file 000.71, HUMEDS, RG 112, NARA.

[24]M. Ralph Kaufman and Lindsay E. Beaton, "South Pacific Area," in Albert J. Glass, ed., *Overseas Theaters*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1973), p. 461. Definitive studies of the psychiatric problems of combat, however, were associated with the North African rather than the Pacific theaters. Berezin contributed the material for the section on Guadalcanal in the above-referenced chapter.

or two days of rest, returned most of his cases to duty. The problems of evacuation from the island probably played a positive role in the next development. Searching for some kind of positive therapy, he decided that his NPs could best be used to extend the dugouts that the hospital needed because of continuing Japanese air attacks. Hence, the prescribed remedy was an enigmatic "P&S," meaning pick and shovel. Under the eye of hospital corpsmen, the NPs worked out their convalescence, and the results were satisfactory. "The combination of sedation, a few days of respite from combat as such, the physical work, and the sympathetic but dignified attitude of the hospital personnel enabled many of these soldiers to return to duty—some to full duty and others to limited duty in a rear echelon." Reports from Guadalcanal and other battlefronts contributed to the Army's decision in November 1943 to create the post of division psychiatrist, which previously had not existed.[25]

The Japanese on Guadalcanal suffered the same diseases as the Americans. Although the enemy had access to quinine—Japan had occupied the Netherlands East Indies, the world's chief supplier—he appeared to lack any systematic malaria control. Army historian John Miller, jr., later wrote, "Among the Japanese probably every man was a victim." As the Allies took control of the air and sea lanes, thus cutting off delivery of food supplies, the Japanese starved as well, and physical depletion increased the incidence of disease. The few enemy prisoners captured revealed evidence of nutritional diseases, including beriberi. During the last stages of the fight for Guadalcanal, disease, despite continuing high rates among Americans, probably became more an ally than an enemy, weakening the defenders here as it had those on Bataan. Their own failings, however, caused Americans to forfeit much of the advantage that an early program of malaria control might have brought them. Like the Japanese, Americans stood at the beginning of a long learning process in the waging of jungle war.[26]

Papua

While South Pacific Area forces planned and launched the Guadalcanal campaign, Japanese expansion on New Guinea ignited a counteroffensive by Southwest Pacific Area forces under General MacArthur. The Japanese hoped to capture Port Moresby, clearing their flank for later attacks against Fiji and New Caledonia. The Battle of the Coral Sea in May 1942 thwarted enemy plans for an amphibious attack on Moresby. Instead, after seizing the north coast settlement of Buna in July ahead of the Allies, the Japanese launched their forces overland along the narrow Kokoda Trail through the Owen Stanley Range.

The struggle that followed imposed terrible burdens both on the troops who fought and on the medics who attempted to preserve their lives in some of the world's most hostile terrain. New Guinea is, next to Greenland, the world's largest island—over 300,000 square miles of dense jungles, reeking swamps, and towering cloud-swathed mountains. In shape, it appropriately resembles a prehistoric creature, with the beaked head

[25]Ibid., p. 462.

[26]Miller, *Guadalcanal*, p. 229.

of the Vogelkop Peninsula turned to the west and the tail of the Papuan Peninsula, scene of the fighting, extending to the southeast. For Army medics, the climate was a nightmare. Many parts of Papua's 90,540 square miles receive 150 to 300 inches of rain a year, and 8 to 10 inches a day during the monsoon season from November to March. The northern coastal areas, where the Allies' ultimate objective lay, consisted of dense jungle, marshy floodplain, and fields of tall kunai grass, giving way at the edge of the sea to a sandy coastal ridge dotted with palms. The heat of the lowlands contrasted sharply with the cold of the higher elevations in the Owen Stanleys. Besides malaria, troops encountered dengue, scrub typhus, dysentery, and tormenting skin diseases that they described as "jungle rot."[27]

Port Moresby, a small copra port on Papua's south coast, was the key to supply and communications for the campaign. Army engineers built airfields in northern Australia and others in New Guinea to defend it. In late August the Australians turned back a Japanese move down the coast, securing the Allied base for the time being. Several weeks later, they halted the Japanese advance toward Port Moresby at Imita Ridge on the Kokoda Trail. Meanwhile, troops filtered in during June and July, including Australian and American air, antiaircraft, engineer, and service units. On 11 August 1942 the USASOS created a base section, called Advance Base, under Brig. Gen. Dwight F. Johns. The Advance Base aided in the operation of Moresby and other New Guinea ports, directed the activities of U.S. service personnel in the area, and supplied U.S. troops in the combat zone. To consolidate U.S. and Australian supply services in New Guinea, General Headquarters, SWPA, on 5 October established on Papua the Combined Operational Service Command.[28]

By this time Port Moresby was on its way to becoming a major base, with new roads, airfields, and harbor facilities. In public health it resembled a frontier town. American and Australian units put up latrines along the beach, dumped their refuse into open pits, and burned their garbage. The soldiers ate most of their food from cans, discarding the containers. A plague of flies beset the town, and soon almost all troops passing through Port Moresby could report experiences similar to those of the 4th Portable Surgical Hospital,[29] which debarked in November. Seventy-five percent of its personnel contracted diarrhea, "from which several . . . never completely recovered." At first there was little malaria, but the troops, by creating a multitude of small water catchments exposed to sunlight, provided perfect breeding spots for the local anophelines.[30]

On 2 September Colonel Carroll, the USASOS chief surgeon, sent Col. Julius

[27]Quoted words from Robert L. Eichelberger, in collaboration with Milton Mackaye, *Our Jungle Road to Tokyo* (New York: Viking, 1950), p. 39. See also Samuel Milner, *Victory in Papua*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, 1957), pp. 56–58.

[28]Milner, *Papua*, pp. 72–77, 87, 103.

[29]Although not official until May 1943, the designation *portable surgical hospital* is used throughout this volume.

[30]Rpt, Maj Neil W. Swinton, CO, 4th Port Hosp, to Surg, 32d Inf Div, 12 Mar 43, sub: Criticism of Portable Hospitals—Final Report, p. 2 (quotation), file 319.1; OofSurg, Adv Base, New Guinea, Sanitary Rpt, Sep 42, p. 1, file 721.5 SWPA (Adv Base D Monthly Reports) 1942–1943. Both in HUMEDS, RG 112, NARA. See also D. Clayton James, *The Years of MacArthur*, 3 vols. (Boston: Houghton Mifflin Co., 1970–85), 2:247, and Alan S. Walker, *The Island Campaigns*, Australia in the War of 1939–1945, Series 5, Medical (Canberra: Australian War Memorial, 1957), pp. 15–37.

M. Blank, MC, with a small staff to Moresby to set up the Office of the Advance Base Surgeon at General Johns' headquarters. During the next few months Blank's staff established a supply depot in the Moresby area for stores coming in from Brisbane and Townsville; arranged for the delivery of hospital units and equipment to the combat zone by aircraft, parachute, and ship; investigated the available water supply; and selected sites around Moresby for three fixed hospitals and a medical laboratory. With the surgeons of the corps, the divisions, the Fifth Air Force, and the Australian Army, Colonel Blank worked on problems of hygiene, sanitation, and malaria control.

Unfortunately, no real medical planning was possible. No malaria control units were available to accompany the troops. Hospitals arrived slowly; at the end of November the total available to American forces in New Guinea were one 200-bed facility near Port Moresby and a 500-bed station hospital 17 miles away. As the I Corps surgeon, Col. William J. Miehe, MC, remarked, "The simultaneous movement of medical installations and combat units was not well coordinated." When epidemics began, inadequate bed strength compelled an evacuation policy of only seven days and the hasty dispatch to Australia even of minor cases, depleting the strength of the Army.[31]

Shortcomings notwithstanding, the chief surgeon hoped to condition his portable hospital personnel for the coming campaign. Carroll recommended a training program that included setting up exercises, marching, climbing hills with loads, and surviving on reduced rations. Meanwhile, Colonel Miehe, with the assistance of his division surgeons, reorganized the medical units of the 32d and 41st Infantry Divisions. Both divisions were triangular, and their three regiments, strengthened by additional units, were intended to function separately as combat teams. Hence, the 107th Medical Battalion of the 32d Division and the 116th Medical Battalion of the 41st Division had to be divided as well. Each regimental combat team (RCT) received a three-platoon collecting company and a clearing company platoon to provide organic support. Since the clearing company of the divisional medical battalion contained only two platoons, Miehe was obliged to reduce the personnel and equipment of each in order to support all three RCTs. Similarly, hospital corpsmen in the collecting companies faced the backbreaking labor of littering the wounded through jungles without respite. In an attempt to prepare themselves, the medical units supporting the regimental combat teams trained vigorously, attended lectures by Australian instructors on jungle warfare, and participated in landing and field maneuvers with the units they supported. But their time was limited. By October most were on their way to New Guinea.[32]

[31]Surg, I Corps, Annual Rpt, 1942, pp. 1–24 (quotation, p. 15), file 319.1–2, HUMEDS, RG 112, NARA. See also Blanche B. Armfield, *Organization and Administration in World War II*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963), pp. 431–32, 442–43.

[32]Simon Warmenhoven, "Medical Department, 32d Division, Papuan Campaign," pp. 22–23, file 370 (Papuan Campaign) SWPA; 163d Inf [Regt] Combat Team Quarterly Rpt, Jan–Mar 43, p. 4, file 319.1. Both in HUMEDS, RG 112, NARA. The terms *regimental task force* and *infantry combat team* were used interchangeably at the time for the official designation *regimental combat team.*

The Campaign

Alarmed by the situation on Guadalcanal, Japanese support for taking over New Guinea abated. Devastated by starvation and disease, an enemy force that had attempted to reach Port Moresby by crossing the mountains began to retreat along the Kokoda Trail in September, with Australian forces in hot pursuit. Meanwhile, Japanese units in the Buna area dug in for a protracted defense.[33] The Allies seized a rough airfield at Kokoda and, when their forces reached the northern coast, hastened to build others at Pongani and later on a grassy plain at Dobodura, 15 miles southeast of Buna.

MacArthur ordered the 32d Division's 126th and 128th Regimental Combat Teams, which were built around the division's 126th and 128th Infantry, to New Guinea, although they had scarcely five weeks of training, none of it in jungle warfare. The decision to send green, or untrained, and poorly led troops to New Guinea ultimately had major medical consequences. After assembling at Moresby, they boarded Douglas C–47s or, in some instances, planes of Australian civilian airlines, which flew them to the front, across the Owen Stanleys. The battle for the north coast, already under way, grew in intensity as the November–March wet season began.[34]

Some troops were not fortunate enough to fly into battle. In an attempt to encircle the retreating Japanese, the 2d Battalion, 126th Regimental Combat Team, supported by a collecting platoon of the 32d Division's 107th Medical Battalion and the 19th Portable Surgical Hospital, crossed the mountains on foot. On 8 October the infantry, medics, and native carriers started up the Kapa Kapa Trail toward Jaure, beyond the divide, climbing through dense jungle up steep ridges to a pass at 9,000 feet and then descending the northern slopes. The soldiers took five or six hours to go 1 mile; exhausted, they discarded shelter halves and mosquito nets. Those who were out of condition broke down quickly and fell beside the trail, gasping for breath. Two weeks into the march, native guides evacuated thirty who could not keep up; the 2d Battalion's commanding officer, who had suffered a heart attack, was returned to Port Moresby. But most went forward with the help of their comrades.

The medics struggled to keep themselves and others going. Medical officers following the column shepherded the stragglers ahead of them, for fear of enemy patrols. They attempted to treat an outbreak of acute diarrhea, caused by contaminated bully beef, that forced some in their distress to cut the seats out of their trousers. Fires could not be built or food cooked, and rain thundered down the matted slippery gorges, swelling the mountain streams to torrents. A young officer scribbled in his diary: "Our strength is about gone. . . . We seem to climb straight up for hours, then down again. God, will it never end?" Between 25 and 28 October the trekkers dragged themselves into Jaure. Their clothes were in tatters, their shoes worn and moldy; many were beginning to have chills and fever. For the remain-

[33]The term *Buna area* was loosely applied to the entire battleground, from Cape Endaiadere on the east to the mouth of the Kumusi River on the west.

[34]Warmenhoven, "Medical Department, 32d Division," p. 1, file 370 (Papuan Campaign) SWPA, HUMEDS, RG 112, NARA; Eichelberger, *Our Jungle Road*, p. 12; Charles E. Heller and William A. Stofft, eds., *America's First Battles, 1776–1965* (Manhattan: University Press of Kansas, 1986), pp. 186–92.

der of the campaign, they carried the fever with them.[35]

The rest of the 126th and 128th Regimental Combat Teams had arrived in the Buna area from the airfields or by shuttle boat during the first half of October, and the Fifth Air Force flew in the 32d Division's third regimental combat team, the 127th, direct from Australia in November. The entire division was now in place. The Japanese, dug in along the sandy palm-dotted coastal ridge, waited in three highly fortified defense areas. Buna, a hamlet boasting twelve houses, was the objective of the 32d Division, while Gona, with its ten houses, and Sanananda Point were the goals of the Australian 7th Division.[36]

Between the forces of the two Allies ran the Girua River, now at flood stage. Drier areas held coconut and rubber plantations and native gardens of taro, yams, sugarcane, bananas, and breadfruit. The troops had to cut their way through the jungle, dense with undergrowth and festooned with thorny vines. Thriving mangrove and sago choked the swamps, now flooded to depths up to 7 feet. Roads were mere tracks, and rainfall averaged 121 inches a year. The region was "literally a pesthole," with endemic malaria, dengue, scrub typhus, various forms of dysentery, and the usual array of tormenting skin diseases to add to the misery of the troops.[37]

Soon a logistical and medical disaster threatened the American and Australian forces. Reaching the front weary and short of food and medical supplies, the troops lived on one-third rations, barely enough to sustain life, and hunger increased their susceptibility to disease. Their feet were swollen; those who had thrown away their shelter halves on the march slept without protection from the heavy rains. Bad weather and Japanese air attacks launched from Rabaul disrupted supply by air and by sea. (Much of the horror of the campaign resulted from the fact that in the beginning each side proved strong enough to interdict the other's supplies but not strong enough to protect its own.)

Quinine, salt tablets, vitamin pills, and tablets for chlorinating water in the early days were hard to come by. Dysentery, accompanied by bloody stools, high fever and prostration, afflicted almost all. The incidence of malaria steadily rose. Only victory could bring relief, but the attackers lacked tanks, mortars, artillery, and flamethrowers, and the Navy refused to risk its ships among the uncharted reefs offshore. For a time the Japanese bunkers, built in the drier soil of the coast, appeared invulnerable. Sick, hungry, and dispirited, the Americans showed little stomach for fighting, and yet immobility might mean their destruction by disease.[38]

Angered by the lack of progress, General MacArthur ordered the I Corps commander, Lt. Gen. Robert L. Eichelberger, to Buna to revitalize the American effort. The appearance of the troops horrified him: "No one," he wrote, "could remember when he had been dry. The feet, arms, bellies, chests,

[35]Quotation from E. J. Kahn, Jr., "The Terrible Days of Co. E," *Saturday Evening Post*, 8 Jan 44. See also Hanson W. Baldwin, "Doughboy's March—A High Point in War," *New York Times*, 7 May 44, and Lida Mayo, *Bloody Buna* (New York: Doubleday and Co., 1974), pp. 70–75.

[36]Sanananda Point was quite swampy; here Japanese bunkers had to be built aboveground.

[37]Milner, *Papua*, pp. 126–128 (quotation, p. 126); Mayo, *Bloody Buna*, p. 87; Rpt, Col George W. Rice, Surg, GHQ, SWPA, 20 Nov 42, sub: Medical Estimate of the New Guinea Situation (Buna Area), p. 2, file 705, HUMEDS, RG 112, NARA.

[38]Milner, *Papua*, pp. 196–97; James, *MacArthur*, 2:241.

armpits of my soldiers were hideous with jungle rot." He ordered the medics to take the temperatures of an entire company of hollow-eyed men near the front. "Every member—I repeat, every member—of that company was running a fever. Yet to evacuate all those with fever at Buna would have meant immediate victory for the enemy. I had to encourage most of those troops back into combat." Finding the 32d Division officers unwilling to lead and their subordinates rapidly becoming unable to fight, Eichelberger relieved the division commander, as MacArthur had authorized him to do, and several battalion commanders as well. Waiting to starve the enemy into submission was impossible. "Disease," wrote Eichelberger, "was a surer and more deadly peril to us than enemy marksmanship. We had to whip the Japanese before the malarial mosquito whipped us."[39]

Eichelberger chose 5 December for a new attack. Despite the command changes, the effort met with strong enemy opposition and failed. However, on the ninth the Australians took Gona, and that same day American reinforcements arrived. On the fourteenth the 32d Division took Buna Village. Throughout the battle zone fringing the Solomon Sea, the logistical picture brightened as well. The relatively small Allied and enemy forces fighting on Papua represented the apex of huge logistical pyramids, which the United States was better fitted than Japan to support. Though losses there and on Guadalcanal were few in absolute terms—neither encounter could be compared to the sustained battles fought that year in the Soviet Union or even in North Africa—Japanese casualties included a disproportionately heavy loss of irreplaceable airmen. In November the Navy smashed a Japanese fleet off Guadalcanal, and the Fifth Air Force steadily tightened a noose about Buna.

As control of the air and sea shifted, supply became ever easier for the Allies. More luggers plied the coastwise traffic, and the airlift grew rapidly as the 32d Division opened a succession of airfields at Dobodura. Though the surviving enemy soldiers on Papua defended well in cleverly concealed bunkers, they were ill and starving, with some resorting to cannibalism to survive. Allied as well as Japanese atrocities were recorded; at Sanananda the patients in an enemy hospital were massacred by their captors. Japanese prisoners brought into American hospitals after the fall of Buna Mission all had malaria, and were "a terribly malnourished and debilitated lot." Surly and uncooperative, they appeared to want to die and had to be watched at night, when the stronger would try to kick the weaker to death.[40]

By the end of January 1943 the whole disputed coastline from Cape Endaiadere to the Kumusi River was in Allied hands. The Buna campaign had ended, after almost six months of savage fighting, and

[39]Quotations, in order, from Eichelberger, *Our Jungle Road*, pp. 39, 23, and 43. See also Milner, *Papua*, pp. 202–03, and Mayo, *Bloody Buna*, pp. 113, 117. The I Corps arrived in the Southwest Pacific Area in October 1942 and served directly under General Headquarters, SWPA.

[40]3d Port Surg Hosp Quarterly Rpt, Jan–Mar 43, p. 5 (quotation), bound in "Histories, Portable Surgical Hospitals in WW II"; Rpt, Lt Col S. Alan Challman, NP Consultant, to CSurg, USASOS, SWPA, 5 Mar 43, sub: Report of Trip Through Base Sections 2 and 3 and U.S.A. Advance Base, p. 9, file 333 SWPA (Trip by Challman) 1943. Both in HUMEDS, RG 112, NARA. See also Milner, *Papua*, pp. 238–321; Mayo, *Bloody Buna*, pp. 145–68.

Allied planners were turning their eyes to the Japanese forces further up the coast, at Lae and Salamaua.[41]

On 9 January Eichelberger relieved the 126th Regimental Combat Team, which had been aiding the Australians on the Sanananda front. Fourteen hundred strong when first committed to action in the third week of November, the unit now numbered 165. Five days later, in the 32d Division area, the I Corps commander greeted the weary survivors "with band music and with what might well be described as a martial welcome. Actually it was whatever face could be put upon it, a melancholy homecoming. Sickness, death, and wounds had taken an appalling toll. . . . They were so ragged and so pitiful that when I greeted them my eyes were wet." On the twenty-first the last remaining enemy, half-starved and disease-ridden, gave up.[42]

On 10 January 1943 Maj. E. Mansfield Gunn, MC, a medical officer on General Eichelberger's staff, wrote to a friend: "Sickness of all sorts, particularly of the various tropical fevers is on the increase also, so I expect that almost everyone in the division will come out of here either wounded or sick. I do not intend to paint a depressing picture, but that is the truth as things stand today." Immediately following the campaign, Lt. Col. Simon Warmenhoven, MC, the 32d Division surgeon, ordered his enlisted medics to take the temperatures of 675 soldiers—a cross section of the combat teams. Warmenhoven reported that "53 percent of this group of soldiers were running a temperature ranging between 99 degrees to 104.6 degrees. . . . In order of prevalence, the cause of the rise in temperature is due to the following: Malaria, Exhaustive States, Gastro-Enteritis, Dengue Fever, Acute Upper Respiratory Infection, and Typhus (scrub)." He noted that the division sick call rate was 24 percent and rising. Some 2,952 soldiers suffering from disease and fever were already in the hospital, and medics were evacuating 50 to 100 daily to Port Moresby because of illness. The fighting had ended for the moment, but many veterans would carry the effects of the campaign throughout their lives.[43]

Medical Support

Under the conditions of Papua, medical support was never more than a holding operation. Care in the combat zone was limited to aid stations, collecting and clearing stations, eleven portable surgical hospitals, and one field hospital platoon. Medical officers and hospital corpsmen sought to keep the troops going, providing suppressive treatment for malaria and first aid for skin diseases, and they sought to treat the wounded as far forward as possible, knowing well the slowness of evacuation and the dangers of infection.

Aiding the wounded entailed considerable risk. On Papua the red cross gave no protection. The 17th Portable Surgical Hospital "never displayed the Red Cross and our men never wore the arm brassard." Hospitals were bombed

[41]Milner, *Papua*, p. 368.

[42]Quotation from Eichelberger, *Our Jungle Road*, pp. 56–57. See also Milner, *Papua*, p. 334, and Mayo, *Bloody Buna*, pp. 170–71. Some enemy forces were able to infiltrate Allied lines and escape to the west bank of the Kumusi River, where they reestablished contact with the defenders of Lae and Salamaua.

[43]As quoted, to include statistics, in Milner, *Papua*, pp. 323–24. See also Mayo, *Bloody Buna*, pp. 180–88.

unmercifully, and medics were shot while carrying litters, dressing wounds on the field, or dragging casualties to aid stations. They learned that dressings had to be dyed khaki or jungle green, because snipers took aim at white bandages. Even casualties tore off their bandages in order not to be an easy target.[44]

From the battalion aid stations, relay teams carried the wounded 800 to 1,200 yards back over twisting trails to collecting stations and portable surgical hospitals, often housed in shelters of leaves cut from the jungle, where they received additional treatment. Casualties were sorted; ideally, those needing immediate surgery went to the portables, while those not so seriously wounded or too ill to remain near the front were sent to clearing stations, usually 2 miles farther to the rear. Though Carroll had intended portables to be divisional units, in this campaign they were attached to the regimental combat teams and worked in the regimental areas.

Hard labor and danger were the lot of the staffs. The four officers and twenty-five enlisted men of the 3d Portable Surgical Hospital, after flying from Port Moresby into Dobodura, carried their 1,250 pounds of equipment in pack frames to the front near Buna. Here they set up close to the regimental collecting station, forward of the command post and only about 300 yards from the Japanese. Sheltered by tents—probably the mercerized cotton tents that had been developed for the portables, lighter than canvas but even more prone to decay in the moist heat of New Guinea—the hospital occupied a hollow, shielded by tall black-rubber trees and the luxuriant vegetation of the swamps. The surgeons worked exactly as Carroll had intended (a rare occurrence on Papua), providing emergency stabilizing treatment. They did not hold any soldier ill with fever or who could safely travel to the rear, and gave those who arrived after dark beds until morning. All day and night bullets struck the trees and perforated the tops of the tents; the fact that the Japanese had little artillery made the position tenable. Yet during a single week—its first on the line—the tiny hospital performed sixty-seven major surgical procedures, including amputations, resections of the bowel, and serious chest operations.[45]

Besides the skill and courage of its staff, the 3d Portable Surgical Hospital's success depended on the sulfa drugs to prevent infection and on the extraordinary toughness of the human frame, able in many cases to survive fatigue, hunger, sickness, wounds, and the trauma of surgery. The surgeons hoped for the death of one young man who had lost the left side of his face to shrapnel—nothing remained, recorded their commander, but "one big hole." But the soldier had "an uneventful convalescence" and was evacuated, hideously disfigured but alive.[46]

The portables played many roles on Papua. To Miehe, Carroll made a plea

[44]Quotation from 17th Port Surg Hosp Quarterly Rpt, Jan–Mar 43, p. 6, file 319.1. See also Warmenhoven, "Medical Department, 32d Division," pp. 4, 7, file 370 (Papuan Campaign) SWPA. Both in HUMEDS, RG 112, NARA. Pvt. Hymie Y. Epstein on the Sanananda Track and T. Sgt. Edwin C. DeRosier in front of Buna, killed while retrieving the wounded, were awarded the Distinguished Service Cross posthumously. See Milner, *Papua*, pp. 165, 175.

[45]Warmenhoven, "Medical Department, 32d Division," pp. 1–9, 23, 24, file 370 (Papuan Campaign) SWPA, HUMEDS, RG 112, NARA.

[46]3d Port Surg Hosp Historical Rpt, Sep–Dec 42, p. 6, bound in "Histories, Portable Surgical Hospitals in WW II," HUMEDS, RG 112, NARA.

for their proper use as surgical hospitals, endorsing a proposal of Colonel Rice, soon adopted, to rename them portable surgical hospitals to emphasize their main purpose. But as the number of wounded increased—and especially, as a tide of sick mounted—regimental surgeons, desperately short of beds and facing great difficulties in evacuating through jungle and swamps, began to exploit the portables as supplementary aid stations or as holding wards for malaria cases. Surgeons, trained for a specific task involving specialized skills, found themselves giving first aid and providing for the care and evacuation of the sick.

Then, as engineers built usable roads, the basic logic of the portable was upended. Medics scrounged for tentage, often heavy canvas, and equipment that was both unauthorized and nonportable; they acquired vehicles to move their patients to the airstrips, especially the invaluable jeep ambulances, equipped with brackets to hold litters. Unable to move their possessions, with beds full of malaria cases, sometimes housed in huts of grass or palms, many portables ended the Buna campaign looking like anything but the units Carroll had designed for frontline surgery. Yet much surgery continued to be done in them. Orthodox or not, they gained universal praise.[47]

In fact, versatility was their prime virtue in a campaign so hastily organized and so poor in resources. In one of the many small forward chains of evacuation, the 23d Portable Surgical Hospital did frontline surgery beside the collecting station of the 128th Regimental Combat Team. Fever victims and the slightly wounded were sent back to the 14th Portable Surgical Hospital, a mile to the rear, while the 18th and 22d Portable Surgical Hospitals formed an evacuation point from which casualties were dispatched either by boat down the coast to Pongani or by native litter-bearers or jeep ambulances up the trail to Dobodura. The 19th Portable Surgical Hospital, operating in the Australian sector, served as both a surgical hospital and a small evacuation facility. In all ways, said Colonel Warmenhoven, the 32d Division surgeon, the portables "proved to be of tremendous value to the medical service given the division. It would be hard to give an exact estimate of the number of lives that were definitely saved by their emergency surgery and heroic work performed near the front lines. They have proven that they have a definite place with combat troops in this type of warfare." The portables reported a mortality rate of 3.6 percent in their patients, equal to many hospitals that were more elaborately staffed and more safely situated. Signifying their success was the reluctance of the units they served to part with them. Early in March 1943 the portables were temporarily removed from the USASOS and assigned to the field forces.[48]

Success was gained at the cost of much suffering. In part, the portables'

[47]Ltr, Col Percy J. Carroll, CSurg, USASOS, SWPA, to Col William J. Miehe, Surg, I Corps, 21 Dec 42, p. 1, file 322 Correspondence re: Portable Surgical Hospitals (SWPA) 1942, HUMEDS, RG 112, NARA.

[48]Warmenhoven, "Medical Department, 32d Division," p. 27 (quotation), file 370 (Papuan Campaign) SWPA, and the Port Surg Hosp Annual Rpts, 1942, file 319.1–2, for the 14th, p. 2; 18th, p. 3; 19th, p. 4; 22d, pp. 4–6; and 23d, pp. 2–3. All in HUMEDS, RG 112, NARA. See also Augustus Thorndike, "Surgical Experiences With the Wounded of the Buna Campaign," *New England Journal of Medicine* 231 (1944): 649–51.



THE JEEP AMBULANCE

problems reflected New Guinea conditions. Estimates that soldiers could carry sixty to seventy pounds of equipment proved quite unrealistic on Papua, where native carriers by law could not be burdened with more than forty pounds. Complaints of exhaustion and reports of portables discarding equipment on the trail caused new efforts to lighten their authorized equipment still further. Other difficulties stemmed from the fact that no one seemed sure of what equipment belonged to whom. Working at the front line under fire, with antiaircraft and mortar fragments falling into the operating room as the surgeons worked, the 23d Portable Surgical Hospital was unable to get supplies from either regiment or division, and fed itself and its patients by foraging. Its commander complained that his subordinates needed contact with a chain of supply; that they needed rest and relief periods as much as other troops; and that they needed native carriers to move their gear, if key technicians were not to arrive at each new location too exhausted to do their work. Miehe, as the I Corps surgeon, urged that all mobile hospitals should come under the field forces; however, Carroll strenuously opposed the idea and, using his short-lived position as USAFFE chief surgeon,

had the portables back under the USASOS within a month.[49]

Despite much courage and ingenuity, the units that served the fighting forces on the New Guinea battlefields were, as Colonels Rice and Miehe both pointed out, simply not adequate for the needs of the sick and wounded. Increased holding capacity near the front line was essential. "A section of a field hospital, or even a complete field hospital," Rice observed after a tour of Buna, "is not large enough to handle the sick and wounded for a triangular division." Rice believed that unless a mobile hospital not smaller than an evacuation hospital was attached, the collecting and clearing stations and portable surgical hospitals would soon become immobilized with casualties. But a section of the 1st Evacuation Hospital did not reach the north coast until 10 February 1943, when it became part of the mushroom growth of a new USASOS sub-base at Oro Bay, on the coast near Dobodura.[50]

[49]Surg, I Corps, Annual Rpt, 1942, p. 5, file 319.1–2; Rpt, Maj Alfonso M. Libasci, n.d., sub: Report of Trip to New Guinea, 5–7 January 1943, pp. 3–4, file 333.1 (Trip to New Guinea) SWPA; Ltr, Col Percy J. Carroll, CSurg, USAFFE, to CSurg, USASOS, SWPA, 23 Mar 43, sub: Portable Hospitals, pp. 1–3, file 322 Correspondence re: Portable Surgical Hospitals (SWPA) 1943. All in HUMEDS, RG 112, NARA.

[50]Ltr, Col George W. Rice, Surg, GHQ, SWPA, to Col Percy J. Carroll, CSurg, USASOS, SWPA, 12 Jan 43, p. 2 (quotations), file 322 Correspondence re: Portable Surgical Hospitals (SWPA) 1943; 2d Field Hosp Annual Rpt, 1942, p. 5, file 319.1–2; U.S. Adv Sub-base [Oro Bay] Quarterly Rpt, Jan–Mar 43, p. 1, file 319.1 (Advance Sub-base B) 1943. All in HUMEDS, RG 112, NARA. Oro Bay developed into an important part of the chain of evacuation during the next phase of the New Guinea fighting. See also Clarence McKittrick Smith, *The Medical Department: Hospitalization and Evacuation, Zone of Interior*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1956), p. 144.

The Ravages of Disease

The prime source of the casualties that choked the hospitals and burdened the evacuation system was another malaria epidemic, whose course formed a sad commentary on the amateurism and poverty of the theater and its medical service. Nothing was easier to foresee than the danger of malaria in New Guinea; but, since a unified anti-malaria effort had barely begun in Australia, little could be hoped for in Papua. There was, as yet, no theater malariologist; no trained American anti-malaria units; an inadequate supply of suppressive drugs; a marked lack of urgency at General Headquarters, despite the experiences of Bataan; and a corresponding lack of concern among the line officers in the field. The anophelines of Papua preferred to breed in sunlight and multiplied around bases as the jungle was cleared. The disease became more virulent by passage through many human hosts, and by late 1942 was "increasing absolutely, proportionately, and in degree."[51]

At Milne Bay, a particularly hard-hit base, the incidence of malaria among all units reached 4,000 per 1,000 troops per year, and cost the service command an estimated 12,000 man-days a month. During the campaign more than 1.5 as many American soldiers were evacuated from the combat zone for malaria as for battle wounds; disease caused 71 percent of evacuations by air, and three-fifths of the sick were malaria cases. Malaria, said Colonel Miehe, was

[51]Surg, Fall River Sub-base [Milne Bay], Monthly Rpt, 12 Dec 42, p. 3, file 319.1 (HQ USASOS Fall River Monthly Reports) Oct 42–Dec 43, HUMEDS, RG 112, NARA.

paramount in New Guinea, and no effective response took shape until after the Buna campaign was over. General Eichelberger considered the health conditions at Buna a command and training failure, and Chief of Staff General Marshall noted the prevalence of disease, reporting that "priorities for munitions overrode those for the necessary [mosquito] screening and other materiel to provide protection at the bases, also there has not been sufficiently rigid sanitary discipline as to the individual soldier."[52]

The whole theater, from the Supreme Commander down, had to become involved in the fight against malaria. It did so in 1943. In April Carroll was able to announce the appointment of a Public Health Service officer, Col. Howard F. Smith, MC, as theater malariologist. MacArthur had already established the Combined Advisory Committee on Tropical Medicine, Hygiene, and Sanitation. In turn, the committee estimated the amounts of antimalarial drugs needed by the theater and used its direct access to MacArthur to ensure top shipping priority for drugs, equipment, and supplies. The north coast of New Guinea, from Dobodura to Oro Bay, was divided into sections, and malariologists and survey units, now arriving from the United States, were assigned to each. Native villages, potential sources both of malaria and venereal disease, were put off limits. Experts located and mapped mosquito breeding areas, and they turned the information over to unit commanders, who were assigned the responsibility for control measures. Parasitologists with the survey units took blood smears from the troops on suppressive Atabrine to determine the minimum effective dosage, not only to save supplies of the drug but also to minimize its toxic side effects.

By then, such work was all the more essential because the engineers had extended their efforts, clearing jungle, letting in sunlight, and spreading the transient pools of water in which the local vectors preferred to breed. Indeed, the 32d Division's disease rate for all fevers—malaria, dengue, and of undetermined origin—peaked in February, when the battle was over, at 5,358 per 1,000 troops per year. Carroll, backed by his commanders, launched a program for training unit anti-malaria details before their outfits departed to fight in malarious areas. He wanted to see many more American enlisted men supplement the few then attending an anti-malaria school established by the Australian Army at Port Moresby, and malaria survey units to accompany or immediately follow the battalion combat teams that had begun leapfrogging up the New Guinea coastline. The 41st Division, replacing the hard-hit 32d, adopted a policy of treating uncomplicated cases as far forward as possible and returning them to duty.[53]

For a time, such measures appeared to succeed. But when fighting began again, the malaria rate rose once more;

[52]Ibid.; Ltr, Brig Gen Charles C. Hillman, OSG, ASF, WD, to SG, U.S. Army, 12 Jul 43, sub: Report of Observations of Medical Service in Southwest Pacific and South Pacific Areas, pp. 2–4, file 333 (Hillman) 1943; Surg, I Corps, Quarterly Rpt, Jan–Mar 43, p. 5, file 319.1. All in HUMEDS, RG 112, NARA. Quotation as cited in Armfield, *Organization and Administration*, p. 442. See also Jay Luvaas, ed., *Dear Miss Em: General Eichelberger's War in the Pacific, 1942–1945* (Westport, Conn.: Greenwood Press, 1972), p. 39.

[53]Warmenhoven, "Medical Department, 32d Division," p. 10, file 370 (Papuan Campaign) SWPA, HUMEDS, RG 112, NARA.



PAPUAN NATIVES SPRAYING MALARIOUS AREAS

in the summer of 1943 "medical casualties which lead to evacuation from the forward areas . . . outnumbered surgical casualties by 7 to 10 fold," and as usual the prime cause of disease was malaria. As Carroll prepared to leave the theater in December 1943, he admitted that losses to malaria still ran too high—about 5,000 soldiers a month were then falling ill (*see Table 3*). He ended his tour as chief surgeon with the plea that "the malaria control problem be given more consideration by all commanders from the top down."[54]

The Buna campaign was Southwest Pacific Area's own school, in which General Headquarters learned the power of malaria and began to adopt measures in hopes of combating it. Why a new lesson was needed, after Bataan, is still far from clear, but the improvised nature of the campaign, the lack of resources, and the divided medical establishment were contributory factors. What a strong chief surgeon with direct access to the commander-in-chief might have accomplished must remain problematical. As matters actually went, the Allies were fortunate that the enemy,

[54]Ibid., pp. 9–10, file 370 (Papuan Campaign) SWPA; Comments and Recommendations, Medical Department, USAFFE, p. 2 (first quotation), attached to Exh. 1 of Ltr, Brig Gen Hugh J. Morgan, OofCSurg, USAFFE, to Brig Gen Percy J. Carroll, CSurg, USAFFE, 12 Aug 43, file 333 (Brig Gen Hugh J. Morgan) SWPA; Ltr, Brig Gen Percy J. Carroll, CSurg, USASOS, SWPA, to CG, USASOS, SWPA, 8 Dec 43, sub: Medical Service in the Southwest Pacific Area, p. 6 (second quotation), file 333 (Carroll) 1943. All in HUMEDS, RG 112, NARA.

TABLE 3—MALARIA INCIDENCE IN U.S. ARMY FORCES, SWPA, 1942–1945

Year	Number of Cases[a]	Attack Rate[b]
1942	4,451	62.49
1943	47,663	250.98
1944	33,475	62.08
1945	38,520	49.03
Total	124,109	78.25

[a]Consists of new admissions and readmissions with only malaria, as well as admissions with malaria and other diseases.
[b]Reflects the number of cases per annum per 1,000 troops.
Source: Adapted from Thomas A. Hart and William A. Hardenbergh, "The Southwest Pacific Area," in Hoff, ed., *Communicable Diseases: Malaria*, p. 579.

here as on Guadalcanal, was also unable to control the disease. At least both sides suffered more or less equally, and by the end of the campaign the Japanese had entirely lost the power to supply either medicine or food to their remaining troops.

Other diseases meant less than malaria in military terms, though all were distressing and at least one was far more deadly. Infectious hepatitis, dengue, and respiratory infections occurred. Sanitation was impossible and diarrhea common, though Miehe recorded that newly introduced tablets for chlorinating water "are working out excellently." Skin diseases were persistent and sometimes disabling. Caused by a variety of agents, including bacteria, fungi, and yeasts, such afflictions increased in proportion to the amount of clothing worn, because clothing prevented evaporation of sweat and kept the skin damp. Yet, without long trousers and shirts, the troops were more susceptible to insect bites and insect-carried diseases, as well as abrasions that quickly became infected. One group of diseases was not a problem on Papua. Whether because of exhaustion, Atabrine, or the appearance of the local women, venereal disease ceased to matter for the duration of the campaign.[55]

Scrub typhus, a disease related to epidemic louse-borne typhus, was spread by chiggers, the larvae of trombiculid mites that lived in a variety of locations but especially favored the four- to seven-foot stands of knife-edged kunai grass that spotted the landscape. Fortunately, the disease spread only from mite to man and not from man to man, and consequently never became epidemic. Yet the mortality caused by scrub typhus (as high as 30 percent of those infected) made it important. Clearing vegetation likely to harbor the mites and using insect repellants were about the only measures available; no means of immunization existed, and treatment meant, in essence, careful nursing of the patient through a dangerous period of very high fever, often accompanied by vivid hallucinations. Hence, a visiting consultant recommended to Surgeon General Kirk that "one or more medical officers with suitable laboratory assistants, qualified in the study of rickettsial infections, should be assigned to a labo-

[55]Surg, I Corps, Annual Rpt, 1942, p. 22, file 319.1–2, HUMEDS, RG 112, NARA.

ratory in New Guinea to conduct research studies in the prevention and therapy of the disease."[56]

Scrub typhus also helped to point up the theater's organizational confusion. MacArthur required the Combined Advisory Committee to advise him, not only on malaria but also on the prevention and treatment of all tropical diseases, both in operational areas and in Australia. In some respects, these requirements made the Australian-American group a substitute theater chief surgeon. Yet no committee member, from Colonel Fairley down, possessed the authority of a true chief surgeon. The committee lacked full access to the medical reports of component commands, and its members were not cleared to participate in operational planning. Furthermore, resentment of the anomalous situation by the higher-ranking surgeons (including the putative chief surgeon) caused the committee to move with caution in many areas.

On malaria the need was so evident and the means of control so well understood that the Combined Advisory Committee scored a great success. But on scrub typhus, in the opinion of its secretary and one of its ranking members, Col. Maurice C. Pincoffs, MC, results were far less impressive. Disagreeing with Col. William A. Hagins, MC, the Sixth Army surgeon, over proper methods of prevention, the committee was unable or unwilling to try to assert authority over him, and the question was resolved only by a lengthy series of field tests, during which the most useful preventive measure—impregnating the troops' clothing with miticide—was long delayed.[57]

Overall, the Papuan campaign, like that on Guadalcanal, was notable for its almost pre-twentieth century disease rate. The predominance of vivax malaria was apparently the main factor in assuring that the death rate did not follow the same pattern; soldiers continued to die by enemy action rather than disease. But the morbidity impacted heavily on the few medical units near the front, making quick evacuation essential.

Evacuation

The combat zone, so short in holding capacity, depended mainly on evacuation to keep its few hospital beds empty. Close to the fighting, methods were primitive. Litter-bearers of the 107th Medical Battalion, 32d Division, "had the toughest job of any," hauling casualties in steamy heat, under enemy fire, over jungle trails too rough even for jeeps. Though Papuan litter-bearers would not approach the front line, they used litters of split bamboo and balsa wood to transport the wounded from the clearing stations, carrying them ever so gently that Miehe called this the best

[56]Ltr, Hillman to SG, U.S. Army, 12 Jul 43, p. 4 (quotation), file 333 (Hillman) 1943; Warmenhoven, "Medical Department, 32d Division," p. 12, file 370 (Papuan Campaign) SWPA; Surg, 41st Inf Div, Quarterly Rpt, Jan–Mar 43, pp. 6–7, file 319.1. All in HUMEDS, RG 112, NARA. See also Cornelius B. Philip, "Scrub Typhus and Scrub Itch," in Ebbe Curtis Hoff, ed., *Communicable Diseases: Arthropodborne Diseases Other Than Malaria*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1964), p. 344. Rickettsia, which cause all forms of typhus, are intracellular microscopic parasitic organisms, smaller than bacteria but larger than viruses.

[57]Maurice C. Pincoffs, "History of Preventive Medicine, SWPA," pp. 11–15, Maurice C. Pincoffs Papers, Medical Unit Historical Collection, U.S. Army Military History Institute, Carlisle Barracks, Pennsylvania.



AWAITING EVACUATION BY PAPUAN LITTER-BEARERS

way to avoid increasing shock. Along the coast, medics turned to boats to evacuate casualties, sometimes taking them all the way to Milne Bay at the tip of the Papuan Peninsula, an increasingly important base despite the fact that it was "one of the most unhealthy malarial spots in the world." Some of the sick and wounded traveled to offshore luggers on native double canoes, the platform between the two hulls accommodating ten litters. But as airstrips opened, the tedious voyage down the coast was largely abandoned, and the quick flight over the passes of the Owen Stanleys to Port Moresby became the standard route of evacuation.[58]

On 24 November the 2d Platoon, 2d Field Hospital, flew in to Dobodura and began operating a hospital of 150–200 beds in a large flat area close to the airstrip. With the 2d and 9th Portable Surgical Hospitals, the platoon soon

[58]107th Med Bn Quarterly Rpt, Jan–Mar 43, Co C, p. 2 (first quotation), file 319.1; Surg, Fall River Sub-base [Milne Bay], Monthly Rpt, 12 Dec 42, p. 2 (second quotation), file 319.1 (HQ USASOS Fall River Monthly Reports) Oct 42–Dec 43; 18th Port Surg Hosp Annual Rpt, 1942, pp. 3–4, file 319.1–2. All in HUMEDS, RG 112, NARA.

formed the main combat evacuation station for the Buna front (*see Map 6*). Army engineers carved roads through the bush, and by the third week of December collecting stations and portable surgical hospitals operating on the coast had moved to the Dobodura trail. Casualties leaving the combat zone by air soon numbered on average over 100 a day.

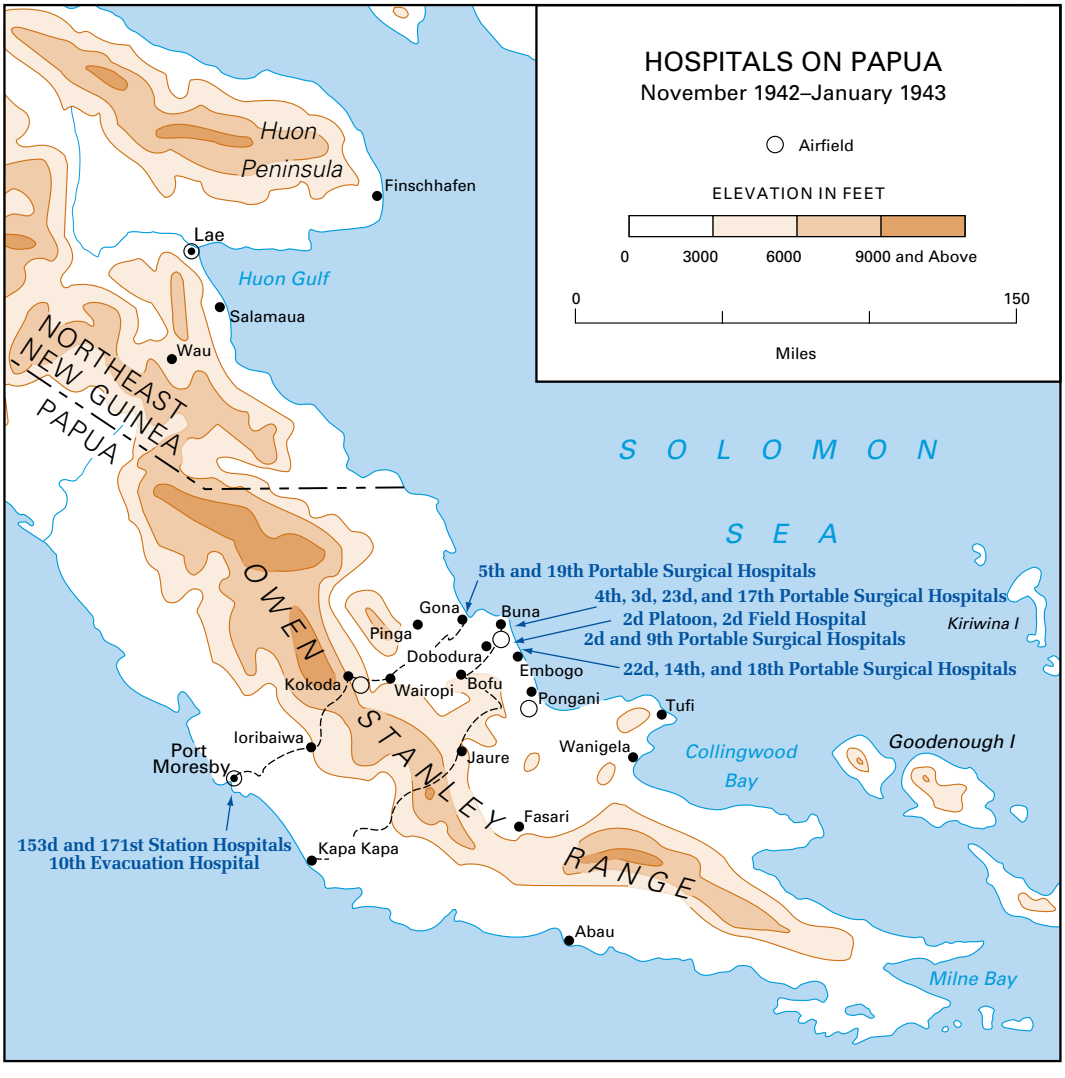
Here, as at the front, the war spared no one. In the Philippines the Japanese had generally respected hospitals, but on Papua they attacked deliberately and often. The 2d Field Hospital platoon was repeatedly struck; on 7 December Japanese planes strafed and bombed in the morning, and in the afternoon eighteen bombers, shielded by Zeros, returned to rain demolition and antipersonnel bombs. Many ambulatory casualties fled back to their units for safety, and the unit commander, Maj. Lemuel C. Day, MC, later died of a heart attack, brought on by the labor of moving the hospital under deep forest cover. In "heavy jungle . . . damp, dark, muddy, and mosquito ridden," the medics like their patients soon fell victims to malaria.[59]

On the Sanananda front, collecting platoons supporting the 126th Regimental Combat Team evacuated casualties to combined collecting and clearing stations, and thence to the portable surgical hospitals that had set up on the main trail leading to the point. In January 1943, as the Japanese defense fell apart, medical units attached to the 163d Regimental Combat Team, which was built around the 163d Infantry, 41st Division, evacuated the sick and wounded by litter to three portable surgical hospitals strung out in a line extending north from Soputa. Casualties might go through all three, bypass one or another, or go directly to an airfield for transport out of the combat zone.[60]

C–47 transports, after ferrying troops and supplies in, returned to Port Moresby filled with either 6 or 9 litters or 15 to 25 walking wounded. Incoming planes signaled to the ambulances at their destination by displaying a white flag for ambulatory and a red for litter patients. The quick removal of casualties from the combat zone—often soldiers wounded in the morning were in hospital beds in the afternoon—improved troop morale, relieved the straining of forward area hospitals, and reduced the need for carrying medical supplies forward. During the Buna campaign the old question of military medicine—is it better to bring medical treatment to the wounded or the wounded to medical treatment?—was answered, despite the portables, on balance by evacuation. In December 1942 planes carried some 3,300 American and 4,300 Australians on the 90-mile, 45-minute flight to Ward's Drome near Port Moresby. Over the course of seventy days of fighting, about 13,000 American and Australian casualties followed the same route, sav-

[59] 2d Field Hosp Quarterly Rpt, Jan–Mar 43, p. 2 (quotation), file 319.1, and Annual Rpt, 1942, pp. 4–6, file 319.1–2, HUMEDS, RG 112, NARA. The hospital's other platoons were operating at Base Section 2, in Australia, and at Milne Bay; see Warmenhoven, "Medical Department, 32d Division," pp. 3, 7, 8–22, file 370 (Papuan Campaign) SWPA. West of the Girua, evacuation was primarily from the Australian airstrip at Popondetta; see 163d Inf [Regt] Combat Team Quarterly Rpt, Jan–Mar 43, p. 12, file 319.1. Both in HUMEDS, RG 112, NARA.

[60] 163d Inf [Regt] Combat Team Quarterly Rpt, Jan–Mar 43, pp. 1–14, file 319.1, HUMEDS, RG 112, NARA. The 163d had replaced the 126th Regimental Combat Team earlier in the month.



MAP 6

ing many a life that would otherwise have been lost on the interminable jungle trails or during the long, dangerous voyages along the coast.[61]

The first two months of U.S. troop operations showed that the fixed hospital facilities around Port Moresby were inadequate to meet the need. By the end of November, when American wounded and fever casualties began arriving in increasing numbers, hospital facilities around the Advance Base headquarters consisted only of the 500-bed

[61]Rpt, Capt M. M. Steinberg, 7 Mar 43, sub: Evacuation of Patients by Air, pp. 1–2, file 314.7–2 (Evacuation); 5th Air Force Annual Rpt, 1942, pp. 7–8, file 319.1–2; Surg, I Corps, Quarterly Rpt, Jan–Mar 43, p. 7, file 319.1. All in HUMEDS, RG 112, NARA.

153d Station Hospital and a 200-bed mission hospital operated by a provisional battalion of the 135th Medical Regiment. At Colonel Miehe's request, the 10th Evacuation Hospital (750 beds) and the 171st Station Hospital (500 beds) arrived at Moresby in December. In a period of three weeks the bed capacity of hospitals on the south shore of New Guinea expanded to approximately 2,428. From 21 November 1942 to 29 January 1943 the hospital units in the Port Moresby area cared for over 10,000 casualties, nearly 6,000 from the 32d Division alone.[62]

Living conditions remained poor. In January an inspecting officer found that the hospitals were operating in the deep mud of the rainy season and that nurses quarters were "very, very poor" and the staffs overworked. Makeshifts of inadequate equipment were ingeniously contrived; fuse boxes served as containers for sterile dressings and metal ammunition-box liners for operating room sinks. Work performed at the 10th Evacuation Hospital was limited to additional debridement of wounds, putting casts on fractures, and occasional amputations where signs of gangrene had appeared. As its name implied, the unit served primarily to ready casualties for evacuation, not to return them to the battle, and the lack of a convalescent center and a replacement depot ensured that few would find their way back to the north coast before the campaign was over.[63]

The pressure of the malaria epidemic caused the evacuation policy for New Guinea to remain low. After treatment, those who were expected to be unfit for duty more than fourteen days were sent on to mainland Australia, usually to Townsville or Brisbane. Returning transport planes, bombers, an Australian hospital ship, and two sea ambulance transports took part in the lift. Since planes flew the 680 miles to Townsville in less than five hours and a ship took two days, doctors here, as on Guadalcanal, preferred air evacuation. For the three months from November 1942 through January 1943, 3,405 casualties left New Guinea by air, only 935 by sea.[64]

Necessary as it was, evacuation removed substantial numbers of fighting men from New Guinea as a whole, as well as from the fighting zone on the north shore. If all evacuees had been severely injured, their departure would have been essential both to their own well-being and to the needs of the Advance Base, which could not hope to maintain facilities for definitive care equal to those of the Australian hospitals. But such was not the case. Miehe complained that hospitals in Australia received many quite trivial cases. Indicating the same problem was the theater's neuropsychiatric evacuation rate.[65]

Like the marines and soldiers on Guadalcanal, fighting men on Papua faced the danger of violent death in a

[62]Surg, I Corps, Annual Rpt, 1942, p. 15, file 319.1–2, HUMEDS, RG 112, NARA.

[63]Rpt, Libasci, n.d., p. 1 (quoted words), file 333.1 (Trip to New Guinea) SWPA; 10th Evac Hosp Annual Rpt, 1942, p. 8, The Historical Unit (THU) Note Cards, Historians files. Both in HUMEDS, RG 112, NARA.

[64]Air Evacuation Board, SWPA, "Medical Support of Air Warfare," Report No. 35, sec. 1, vol. 2, pt. 2, p. 483, file 314.7–2 (Army Air Forces—Medical Services) SPA, SWPA, HUMEDS, RG 112, NARA.

[65]Surg, I Corps, Annual Rpt, 1942, p. 19, file 319.1–2, HUMEDS, RG 112, NARA. A thirty-day evacuation policy was inaugurated in December 1942. The transfer of the 1st Marine Division from Guadalcanal to the Southwest Pacific Area brought thousands of new malaria cases, thus complicating the situation in Australia.



BUNA CASUALTY ARRIVING AT THE 171ST STATION HOSPITAL

hostile and alien environment, harassed by insects and oppressed by smothering heat. Hunger, dysentery, attacks of malaria, and the daily grind of combat inevitably caused breakdowns. Symptoms ranged from an exaggeration of the startle reflex to uncontrollable weeping, irrational behavior, and panic fear. At first some patients, wrote the commander of the 23d Portable Surgical Hospital, "would lie on the ground holding hand grenades and threatening to throw them at the slightest noise," but later they became "quiet and stuporous."[66]

Meeting the problem in the Southwest Pacific Area was far from easy. The theater lacked psychiatrists, and Carroll seemed to distrust his psychiatric consultant. Commanders wanted to be rid of their psychiatric cases, and doctors, baffled by seemingly causeless physical symptoms of stress, seized on the quick expedient of shifting the problem to the rear. Stress and malaria interacted. Soldiers hoping to escape danger evaded taking their Atabrine or quinine, acquiring the disease. Hunger and exhaustion turned subclinical malaria cases into disabling ones. In the process of evacuation the neuropsychiatric cases learned that bizarre behavior meant

[66]23d Port Surg Hosp Annual Rpt, 1942, p. 3, file 319.1–2, HUMEDS, RG 112, NARA.

escape from danger, and therefore exaggerated their symptoms. By the time they reached the general hospitals in Australia most were, for all military purposes, ruined men. Often their journey did not stop there. During 1943 almost 40 percent of evacuations out of theater were listed as "mental" and over 10 percent as psychotics, meaning, in the parlance of the time, that they had severe and tenacious symptoms.[67]

The same year brought the beginning of a determined effort by Carroll and his psychiatric consultant to reverse these extraordinary figures by educating medical officers to substitute a diagnosis of exhaustion for that of mental illness and by providing small treatment centers close to the line. But, as with malaria, reform came later. The Buna campaign created the problem, and ended with it still unsolved.[68]

Supply

Medical supply was one of the brighter spots of the campaign, despite the fact that it remained a rough and ready affair. Any available ship carried materiel from Australia to New Guinea. The 9th Medical Supply Depot at Port Moresby stored and distributed supplies via C–47 transports that flew over the Owen Stanleys or to Milne Bay, where boats forwarded materiel up the coast to Buna. The 2d Platoon, 2d Field Hospital, at Dobodura was not only the main evacuation unit but the issue point for medical supplies as well. Where no airfields existed, supplies were dropped by parachute. Jeeps, native porters—indeed, any available transport—carried them to the front from the airstrips, the beaches, and the coastal inlets. Early in the campaign, supply was disrupted by shipping uncertainties in Australia, enemy air attacks on ship convoys, bad weather, and lack of land transport. Widespread, though temporary, shortages of tents, litters, cots, rations, and quinine resulted. Litters remained a problem, accumulating at Moresby, where they were not needed, and disappearing with the wounded from Buna, where they were.

But by mid-December more luggers had become available for coastwise shipment, while the construction of additional airfields on coconut plantations permitted expansion of the airlift. Though supply remained tenuous, sustained by expedients, the efficiency of Major Libasci's section in forwarding materiel from Australia, as well as the triumph of the Allies on the sea and in the air, enabled the system to improve steadily to the end of the campaign.[69]

The Papuan campaign gave the Allies their first land victory in the war against Japan. But because their soldiers were

[67]Interv, Col S. Alan Challman, 13 Sep 45, file 000.71, HUMEDS, RG 112, NARA.

[68]Memo, Col William L. Wilson to Ex Off, [OSG], 1 Nov 43, sub: Visit to Southwest Pacific Area, p. 10, file 333 (Visit of [Col Wilson] to SWPA) 1943, which suggests that many NPs were actually retarded men who should not have been overseas in the first place. For an interesting and detailed account by Carroll's neuropsychiatric consultant, see Rpt, Challman, 5 Mar 43, file 333 SWPA (Trip by Challman) 1943. Both in HUMEDS, RG 112, NARA. See also Lindsay E. Beaton and M. Ralph Kaufman, "As We Remember It," in Glass, ed., *Overseas Theaters*, pp. 748–49.

[69]Charles M. Wiltse, *Medical Supply in World War I*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1968), pp. 417–18, 438; Warmenhoven, "Medical Department, 32d Division," pp. 14, 25, file 370 (Papuan Campaign) SWPA, HUMEDS, RG 112, NARA; James, *MacArthur*, 2:231, 234; Eichelberger, *Our Jungle Road*, pp. 34–35, 39.

insufficiently trained and equipped for jungle warfare, they paid a high price for their triumph. Of the 33,000 soldiers committed to battle on New Guinea, 3,095 lost their lives (2,291 Australians, 804 Americans), or about 1 in 11. On Guadalcanal, by contrast, out of 60,000 Americans, 1,600 lost their lives, or about 1 in 38. The official U.S. Army history of the Papuan campaign declares: "The conclusion is inescapable that the fighting in Papua had been even costlier than had at first been thought, and that the victory there, proportionate to the forces engaged, had been one of the costliest of the Pacific War."[70]

Of a total strength of 10,825, the 32d Division's three combat teams suffered over 9,600 casualties, including some 7,000 sick—a casualty rate of almost 90 percent. The 126th Infantry virtually ceased to exist as a unit. Australian losses to sickness were even heavier, more than 15,000 cases of infectious disease during 1942 alone. Among the 32d Division more than 5,000 cases of malaria occurred, including some 4,000 first attacks. The disease, though seldom fatal, proved to be extraordinarily tenacious, with one relapse following another until more than 2,000 officers and enlisted men had to be dropped from the division rolls, "all of them casualties of the campaign just as surely as if they had been wounded in battle." Similarly, malaria accounted for 12 percent of the airmen removed from flying in the theater by the Fifth Air Force.[71]

Such figures did not record a triumph for the theater or its medical officers. Much can be forgiven those who were obliged to provide for inexperienced soldiers fighting a jerry-built campaign in an appalling environment. Overall, however, medical support was inadequate to meet the extraordinary needs of the troops. The battles on Guadalcanal and Papua revealed that American armed forces—despite their nation's lengthy experience in the tropics and its distinguished contributions to tropical medicine—had much to accomplish in preventive medicine if they were to fight the Pacific war without paying an unacceptably high ransom to malaria and other diseases.

[70]Milner, *Papua*, pp. 371–72 (quotation); Miller, *Guadalcanal*, p. 350.

[71]Milner, *Papua*, pp. 371–72 (quotation); 5th Air Force Annual Rpt, 1942, p. 10, file 319.1–2, HUMEDS, RG 112, NARA.

CHAPTER V

Alaska: The Pyrrhic Victory

An environment of quite another sort confronted Americans who fought in the frigid and storm-swept North Pacific. Islands could hardly have been found on earth that differed more in climate, environmental hazards, and disease threats than the treeless Aleutians and the jungled Solomons.

Yet some similarities marked the two theaters. The distances of the North Pacific Area were as formidable as those of the South Pacific Area. The Territory of Alaska comprised some 584,000 square miles, equal to almost one-fifth the area of the forty-eight United States. The capital of Anchorage lay more than 1,500 miles from Seattle, Washington, and almost 1,700 miles from the island of Attu. In the region where fighting occurred, conditions were as primitive as in remote Melanesia.[1]

In the Aleutians the Army made its first amphibious landing upon a hostile shore and suffered casualties proportionately as heavy as any in the entire Pacific struggle. A recent writer on World War II has suggested that Guadalcanal gave American armed forces their basic lesson in how not to carry out an amphibious operation. "On Guadalcanal, command arrangements were confused and missions unclear, reconnaissance was ineffective and naval protection withdrawn at a critical moment; unloading of supplies was incomplete, air power and reinforcement slow in being brought forward, and organized logistic backup at the start nonexistent." Not every one of these complaints could be lodged against the joint performance of the Army and Navy in the Aleutians, but the action was marked by failures of many sorts. The medics who supported the landing bore much of the resulting burden, from the beaches of Massacre Bay to the frenzy of the enemy's final banzai charge.[2]

The Medical Picture

On the verge of World War II, Alaska was a vast and undeveloped territory without road connections to the United States. Its remoteness, size, rugged landscape, and severe winters provided its

[1]Gordon H. McNeil, "History of the Medical Department in Alaska in World War II," pp. 6–8, file 314.7–2 (Medical Activities) Alaska, Historical Unit Medical Department (HUMEDS), Record Group (RG) 112, National Archives and Records Administration (NARA), Washington, D.C.

[2]Eric Larrabee, *Commander in Chief: Franklin Delano Roosevelt, His Lieutenants, and Their War* (New York: Harper and Row, 1987), p. 637.

chief defense. A few Army medical personnel—2 officers and 20 enlisted men—served the territorial garrison of 400 soldiers, comprising two rifle companies, at Chilkoot Barracks near Skagway on the southern panhandle.[3]

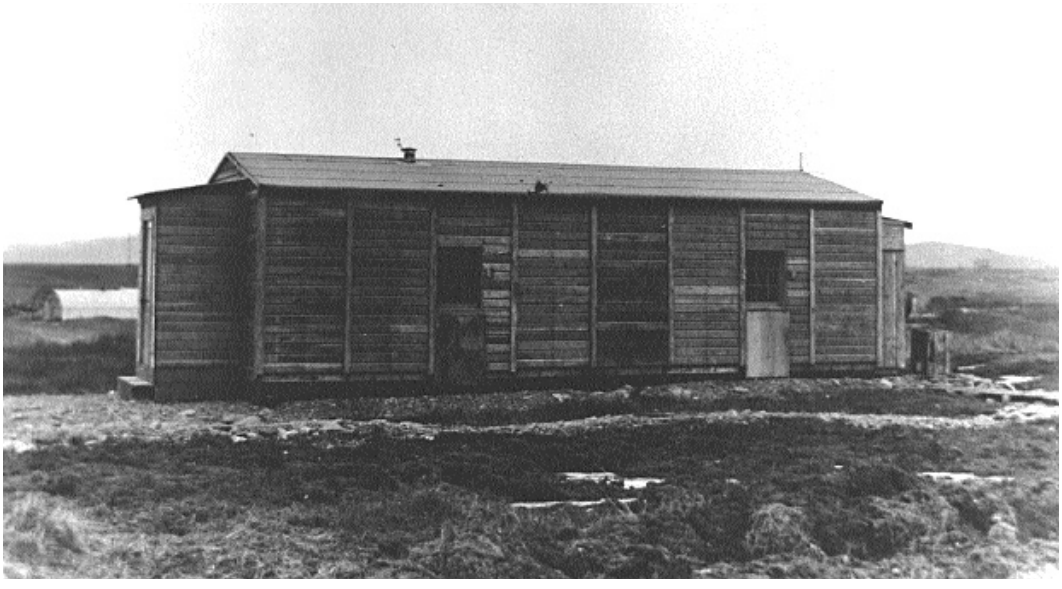
According to War Department policy established in 1938, safeguarding Alaska from enemy attack was essentially a responsibility of the Navy, supported by Army ground and air units. In 1940 an influx of new forces gradually increased the Alaskan Department's defense forces until, by 7 December 1941, Alaska contained naval bases at Sitka, Kodiak, and Dutch Harbor, each protected by the Army; a new Army base called Fort Richardson, near Anchorage; and a network of air bases, including Elmendorf Field near Fort Richardson, and airfields near Fairbanks, Ketchikan, Yakutat, Seward, and Nome, each with its garrison drawn from the Army's Alaskan contingent of about 21,500 officers and enlisted men. Troops were stationed in the three major climatic regions of Alaska: the rain-soaked but relatively mild southern panhandle; the colder southwestern coast, where bitter winds from the Bering Sea encountered the warmer air over the Japan Current, breeding frequent storms; and the dry cold of the central plateau, where winter temperatures of -50° F. and below were common. Breathtaking scenery abounded, in the fjords and glaciers of the south coast, the mountainous coastal range, the Brooks Range in the north, and the Arctic north coast.

Construction of weatherproof cantonments was slow-paced and difficult, impeded by distance, mud, and shortages of materials. Transportation was a problem everywhere; until the Alcan Highway opened in November 1942, almost all supplies had to be brought from the United States by boat or plane. Railroads were few, and the climate and mountains made all road-building arduous. Even in the valleys and lowlands, work was slowed by the muskeg, or peat-forming bogs, and by the wetness of the ill-drained grassy plains called tundra. Throughout the vast region, medical personnel struggled "in the cold, snow, rain and fog to establish a medical service at each of the new posts activated in Alaska." Unit dispensaries opened in tents and such odd sites as an abandoned cannery or two Yakutat huts placed end to end, while civilian hospitals took in the seriously ill or injured.[4]

During the first half of 1942 six more posts opened, including those at Naknek and Cold Bay, on the Alaska Peninsula, and the one on Umnak Island, west of Dutch Harbor, in the Aleutians. Army strength increased to 51,000, including airmen of the Eleventh Air Force, antiaircraft units, and engineer contingents who had been rushed to the construction sites at air bases. A command structure in the Alaskan Department took form, as Army forces in Alaska were designated the Alaska Defense Command under Maj. Gen. Simon B. Buckner, Jr. In turn, Buckner was subordinate to the Fourth Army commander, Lt. Gen. John L. DeWitt, who also took charge of the San

[3]Stetson Conn, Rose C. Engelman, and Byron Fairchild, *Guarding the United States and Its Outposts*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, 1964), p. 223; McNeil, "Medical Department in Alaska," p. 52, file 314.7–2 (Medical Activities) Alaska, HUMEDS, RG 112, NARA.

[4]McNeil, "Medical Department in Alaska," p. 54, file 314.7–2 (Medical Activities) Alaska, HUMEDS, RG 112, NARA.



UNIT DISPENSARY AT NOME, *consisting of two Yakutat huts placed end to end*

Francisco–based Western Defense Command after Pearl Harbor. Overall strategic command of the Alaskan combat zone was vested in the naval commander of the Alaskan Sector, and ultimately in Admiral Nimitz.

The Alaska Defense Command chief surgeon was Col. Luther R. Moore, MC, a gruffly humorous long-service Regular Army officer with a background in Alaska that qualified him to understand the problems of the region; as he said, "The Army has come knowing little or nothing . . . but learning much by experience." Other figures of importance were Lt. Col. Ellis M. Altfather, MC, the Eleventh Air Force flight surgeon, technically a subordinate but, here as elsewhere, one with substantial autonomy, and Navy Capt. William L. Mann, Jr., MC, the Alaskan Sector chief surgeon. Because Army forces in Alaska were comparatively few and difficult medical problems rare, the Office of the Chief Surgeon remained small, even though Moore's duties combined those of theater chief surgeon and services of supply surgeon. In early 1941 the office consisted of the chief surgeon, assistant surgeon, and a varying number of enlisted men; after the fighting began, personnel increased by two Medical Administrative Corps officers, three noncommissioned officers, and twelve permanent enlisted men—a minuscule group compared to other theaters. In some ways the burdens facing Moore's staff were made heavier, and in other ways lighter, by the Alaskan environment.[5]

The control of disease posed few serious problems. Alaska, with a population

[5]Ibid., pp. 57, 63–65, 80, file 314.7–2 (Medical Activities) Alaska; CSurg, Alaska Def Cmd, Annual Rpt, 1942, p. 3 (quotation), file 319.1–2. Both in HUMEDS, RG 112, NARA. Altfather also served as acting chief surgeon of the command from February to June 1941.

of only 75,000, was too sparsely settled for acute sanitary or venereal disease problems to develop. For most of the soldiers who served there, access to women was limited. Yet the 32,000 native Indians, Aleuts, and Eskimos, by reason of their isolation, were highly susceptible to the white man's diseases and readily fell victims to common childhood diseases, such as measles and whooping cough, and to tuberculosis as well. Among some tribes, local customs permitted casual sex and, through contact with infected outsiders, many women had acquired venereal disease (VD); amazing some soldiers, they not only asked no money for sexual favors but also gave their lovers ivory trinkets and other keepsakes when they parted. Army medics provided treatment for civilians as well as soldiers and, to ensure that VD did not become a problem for the command, pursued an active program of prevention among the troops by physical inspections and propaganda films, posters, and lectures. Prophylactic stations and individual kits were both made available. The result of all these factors was an extraordinarily low incidence of VD throughout the war, never exceeding 8.3 per 1,000 troops per year. Outbreaks of other diseases, either among new soldiers on post or among civilians in remote villages, were contained by distance and never posed the threat of a serious epidemic outbreak.

Overall, the Alaskan Department enjoyed excellent health. The cold climate proved on balance to be more a blessing than a curse. Gnats and mosquitoes were abundant in summertime but were mere pests, spreading no infections; brown rats swarmed in some areas, but typical rat-borne diseases were absent. As might be expected, the most widespread problem was common respiratory infection, which reached its highest rate (249.5 per 1,000 troops per annum) in 1942 and thereafter fell rapidly as a result of increased experience, better clothing, and the construction of weathertight cantonments. Even in this respect, Alaska was not much worse off than the United States; troops stationed in the department largely escaped a national epidemic of respiratory diseases in the winter of 1943–44, except for fliers who picked up infections in the zone of interior and, on their return, became sources of disease among the Alaska garrison. As in other theaters, troops in the department suffered from the hepatitis epidemic of 1942, caused by contaminated yellow fever vaccine. But the 2,749 cases of 1942 fell to 37 in 1943, and by the end of the war the disease had almost disappeared.

Some sanitary problems were encountered, especially when the new posts were under construction. Especially in the tundra, the high Alaskan water table posed some difficulties in waste disposal, and may have helped to account for a fairly high level of diarrheal diseases during 1942–43. Clothing was a matter of intense medical interest under Alaskan conditions, and medical officers worked with Quartermaster Corps representatives to devise protective gear. Experts from both branches were frequent visitors to Alaska, and an experimental board was set up by the Alaska Defense Command to study all aspects of cold weather operations.

The most notable medical feature of service in Alaska was a paradox. Soldiers were healthier than in any other overseas theater, and in some respects healthier than in the United States, and yet their isolation and perhaps their lack

of a significant role in the war caused them to believe, and report to the medics, that their health deteriorated in Alaska.[6]

If disease was rare, the problems of providing medical support for the troops and evacuating the few who became ill were severe. Alaskan geography dictated defense by scattered garrisons, rather than by concentrations of mobile reserves. Medical support was necessarily dispersed as well. The rapid opening of twenty-one posts and the increase in Army forces to 94,000—more than the civilian population of Alaska—made the first thirteen months of the war a difficult time at best, and distance and unit fragmentation made the difficulties worse. Typically, the medical detachment supporting the 4th Infantry was divided into battalion medical sections, one remaining with the regimental headquarters and the 1st Battalion at Adak Island, another accompanying the 2d Battalion to Nome, and a third following the 3d Battalion to Fort Richardson.

Even this degree of dispersion caused some problems, among them the question of how the regiment's two dentists were to be divided among three sections. But there were worse cases. Some units were not so much divided as disintegrated. The 138th Infantry, for example, served simultaneously in eight posts from Juneau to Atka, a distance of 2,000 miles! To function properly, medical sections needed additional personnel and equipment, but X-ray and laboratory technicians, pharmacists, anesthetists, and dental technicians were not easy to obtain. Personnel shortages throughout 1942 paralleled other Alaskan shortages, notably in housing and equipment. As in all combat theaters, troops of the combat arms built up more rapidly than support troops, and in consequence Moore was unable to reach his goal of medical self-sufficiency at each Alaskan station.[7]

The workings of the personnel system did little to relieve his difficulties. Medical personnel were requisitioned by grade and number through the Western Defense Command under procedures that proved to be inflexible and slow. Enlisted men were sometimes transferred from other types of units in Alaska, but, as usual, commanders seized the opportunity to reassign those of poor quality. In December 1941 all the Alaskan stations together provided only 744 medics (128 officers and 616 enlisted men) to support 23,800 soldiers and airmen. Five months later, however, on the eve of the Japanese attack, 2,089 medics (211 officers and 1,878 enlisted men) supported 51,000 troops—46 per 1,000, or slightly below the 5-percent ratio that Army doctrine held to be adequate.[8]

Equally strained during the days of the buildup was the hospital system. The Alaskan environment and the military situation, by tying troops to their scattered

[6]CSurg, Alaska Def Cmd, Annual Rpts, 1942, pp. 5–7, 12–14, and 1943, pp. 6–7, file 319.1–2; McNeil, "Medical Department in Alaska," pp. 289–92, file 314.7–2 (Medical Activities) Alaska. All in HUMEDS, RG 112, NARA.

[7]CSurg, Alaska Def Cmd, Annual Rpt, 1943, p. 1, 4–5, file 319.1–2; McNeil, "Medical Department in Alaska," pp. 67, 96–98, file 314.7–2 (Medical Activities) Alaska. Both in HUMEDS, RG 112, NARA. See also Clarence McKittrick Smith, *The Medical Department: Hospitalization and Evacuation, Zone of Interior*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1956), p. 142.

[8]*Strength of the Army*, 1941, 1942; McNeil, "Medical Department in Alaska," p. 80, file 314.7–2 (Medical Activities) Alaska, HUMEDS, RG 112, NARA.

stations, precluded large centralized hospitals. Hence, as each post opened in turn, Moore established an unnumbered station hospital with a bed capacity equal to 5 percent of the post's planned strength. General, evacuation, surgical, and convalescent hospitals were never sent to Alaska. By the end of 1940 Moore had a long-established 25-bed hospital at Chilkoot Barracks, plus new 100-bed facilities at Annette Island, Yakutat, and Ladd airfields, and a new 600-bed hospital at Fort Richardson, and one year later five station hospitals at Sitka, Kodiak, Dutch Harbor, Seward, and Nome. By 31 May 1942 he had added 50-bed hospitals at Juneau and Cordova; a 100-bed facility at Naknek; and larger station hospitals, each with a potential bed capacity of 500, at Cold Bay and on Umnak Island (*see Map 7*). Upon these facilities fell the burden of caring not only for soldiers and airmen but also for some sailors, for Allied servicemen including both Canadians and Russians, for civilians unable to find care in understaffed hospitals off post, and for Alaskan natives in need of emergency help.

In September numbered station hospitals were assigned to Alaska, and the period of most intense shortage was over. Problems of personnel procurement were eased, and station hospitals were sent from the United States to help support the many new posts. By the end of the year the Alaska Defense Command counted 539 officers and 3,789 enlisted men of the Medical Department to support more than 94,000 troops, or 4.6 percent as against the authorized 5 percent. Bed strength rose rapidly; in July only 1,565 of 3,724 authorized beds were available, but by the end of the year the total neared 2,000. Nevertheless, the general rule that the strength of support forces lagged during a buildup continued to hold true. By that time, the increased strength of the command meant that 4,600 beds were now authorized. In terms of formal requirements, the medics had actually lost a little ground.[9]

Hence, familiar problems continued. In remote areas small troop units were fragmented beyond the capacity of organic medical units to support them. The station hospitals had to come to the rescue. On the island of Adak, for example, many small groups of soldiers were entirely without medical care, obliging hospital personnel to organize dispensaries and to staff them themselves.

Scattered posts and Alaskan weather combined to put heavy burdens on evacuation as well. To move casualties between stations in Alaska, medics used water, rail, and air. Of these, air was by far the best—a quick, flexible mode of transport that exploited the many new airfields and gave the sick and injured an easy ride. Roads tended to be few, long, and poor, and water transport slow and hard to schedule. Evacuation by rail was only possible between points on the Alaska Railroad. In 1941 a few patients had been carried by air in bombers, but in 1942, after much difficulty, Moore obtained light planes for use as air ambulances and even equipped them with skis or floats for greater flexibility in reaching remote outposts. Transportation between large bases and between Alaska and the United States was provided in the same manner as elsewhere in the Pacific. When Moore's requests for dedi-

[9]CSurg, Alaska Def Cmd, Annual Rpts, 1942, pp. 3–5, and 1943, p. 1, file 319.1–2; McNeil, "Medical Department in Alaska," pp. 99, 169–73, 176, file 314.7–2 (Medical Activities) Alaska. All in HUMEDS, RG 112, NARA.

cated C–53 transports were rejected, he turned, like other chief surgeons, to cargo and transport planes of the Air Transport Command's Alaska Wing. Straps or brackets were installed to hold litters on return flights. Eventually, even heat was provided, though many evacuees traveled under blankets in unheated cargo compartments, where temperatures fell below 0°F.[10]

No summary account can convey the problems that had to be overcome to treat and evacuate the sick and injured. As Colonel Moore remarked, "Weather [in Alaska] is always available in a variety of forms." Medical personnel won hard-earned decorations for work that would have been routine anywhere else. Equipment authorizations provided too few vehicles for local conditions and the wheeled vehicles that could be obtained were largely roadbound. In February 1943 a three-vehicle convoy—a 2½-ton truck, an ambulance, and a caterpillar tractor—required nine hours to carry one injured man 33 miles; the ambulance failed when the road ended, and the tractor dragged the truck through snowdrifts, up steep slopes, and through three frozen streams to the destination. At Nome a dog team evacuated patients from outlying posts to the station hospital, dragging a basket sled large enough to carry a litter. The sled litter, called an *akhio*, was the handiwork of an Eskimo enlisted medic. Other medics developed toboggans for carrying patients.[11]

The rain and rough seas of maritime Alaska proved even more of a challenge than the Arctic interior. Aleutian storms could isolate an island for days or weeks at a time, and turn much of the landscape into a morass. On Adak, station hospital personnel watched in amazement as a tractor and trailer used to move patients sank "halfway out of sight" in muskeg. A medical officer, dispatched to aid an injured man on Nikolai, was "swamped once or twice" in rough seas, finally reaching shore in a crash boat; the patient, despite a severely fractured skull, was brought off through "terrific surf" and survived. Another doctor walked with a rescue party for seventeen hours through a snowstorm to treat a Seabee with appendicitis; at journey's end he operated on the spot, saving the man's life. Such incidents were almost as harrowing as combat.[12]

Limited transportation, distance, and climate also affected medical supply. During the buildup Moore had little to do with supply. Medical units arrived with their equipment, and the Seattle Port of Embarkation shipped medical maintenance units to the various posts on the basis of strength reports. Without such automatic resupply the remoter stations would have been in desperate straits, and yet to ship the maintenance units from Seattle was not to ensure that they arrived. Ship sailings and air service were both irregular, ports of entry might be icebound, and transshipment within Alaska ran afoul of the poor transport system. Hence, delay was common. At McGrath some medical apparatus

[10]McNeil, "Medical Department in Alaska," pp. 136, 268–70, file 314.7–2 (Medical Activities) Alaska; CSurg, Alaska Def Cmd, Annual Rpt, 1942, pp. 17–18, file 319.1–2. Both in HUMEDS, RG 112, NARA.

[11]CSurg, Alaska Def Cmd, Annual Rpt, 1942, p. 2 (quotation), file 319.1–2; McNeil, "Medical Department in Alaska," p, 258, file 314.7–2 (Medical Activities) Alaska. Both in HUMEDS, RG 112, NARA.

[12]As quoted in McNeil, "Medical Department in Alaska," pp. 261, 263, file 314.7–2 (Medical Activities) Alaska, HUMEDS, RG 112, NARA.



MAP 7

arrived partly in the fall of 1942 and the rest in the spring of 1943. Nothing moved during the winter.

In November 1943 Moore implemented a requisition system, but problems continued. Eight months might pass from the time a requisition was submitted until the article was received, and perishables, such as X-ray film and biologicals, might be outdated at the time they arrived. Local procurement was only a partial answer to shortages, though the larger cities provided imported products and sold some local items and manufactured others. Many posts, however, were far from such



sources. Storage was a continuing headache. Sometimes, as on Adak, supplies brought into half-built camps were simply dumped on the open tundra. Not surprisingly, linens mildewed, plaster set, and film deteriorated. Many items, especially biologicals, required not only shelter but also heated buildings in the intense cold of the central plateau. A clutter of different shelters—Quonsets, dugouts, basements of post buildings, pyramidal tents, and off-post structures like schools—served to protect medical supplies. The chief surgeon found that coordinating the movement of supplies was one of his most impor-



HOSPITAL DOG TEAM

tant duties, for spot shortages remained the rule even after supplies became generally adequate.[13]

In mid-1942 the medical service in Alaska was in its most difficult phase of growth—short of personnel and hospital beds and intermittently embarrassed for essential supplies. The Alaska Defense Command was able to live with these shortages, but only as long as it remained essentially disengaged from the fighting. Its ability to support combat operations was uncertain. Efforts by General Buckner to make his command a significant part of the war effort had not, at that point, convinced Washington that a serious threat existed to the nation's northernmost outpost. Only the Japanese proved able to do that.

The Enemy Attacks

The Japanese plan to strike at Midway Island also provided for a diversionary assault upon the Aleutians. Scheduled for early June 1942, the invasion objectives were to conquer new outposts for the Japanese defense perimeter, to prevent Americans from using the Aleutians to attack Japan, and to obstruct U.S.-Soviet military cooperation in the North Pacific. Forewarned by naval intelligence, the Army strengthened Alaska's air defenses, sending limited reinforcements, including some

[13]Ibid., pp. 141–42, 496–501, file 314.7–2 (Medical Activities) Alaska; CSurg, Alaska Def Cmd, Annual Rpts, 1942, p. 7, and 1943, p. 2, file 319.1–2. Both in HUMEDS, RG 112, NARA.

B–17s, to the Eleventh Air Force. The war suddenly veered toward Alaska, and soon resulted in the Alaska Defense Command's first combat casualties.[14]

During the first morning hours of 3 June, fighters and bombers from two carriers of a Japanese amphibious task force attacked Dutch Harbor on the island of Unalaska. High explosive and incendiary bombs struck naval installations and nearby Fort Mears. Late the following day the Japanese planes returned, destroying oil storage tanks, wrecking one wing of a naval hospital, and damaging a beached barracks ship. The two-day attack claimed forty-three lives, including thirty-three soldiers. Though it stood in the target area, the Fort Mears Station Hospital treated sixty-four wounded, evacuating bed patients to foxholes and performing nonemergency surgery at night. An underground hospital, begun after the first attack, was pushed to completion by medical personnel in the aftermath of the raids. Surprised observers noted an immediate rise in morale. The monotony was broken, the enemy had become visible, and the war was real at last.[15]

Meanwhile, on 6 June Japanese forces occupied the island of Kiska, in the western Aleutians. Then they seized remote Attu, briefly abandoned it, but later returned. Defeat of their main thrust in the Battle of Midway far to the south left their forces in the Aleutians dangerously isolated and exposed to counterattack. Though Buckner and DeWitt argued for a northern approach to Japan along the Aleutians, the real motive for the American action that followed was probably psychological—to remove the sole enemy lodgment on American soil.

In any case, preparations for an assault soon were under way. The buildup was rapid, though always constrained by the greater importance and more pressing needs of the South and Southwest Pacific campaigns. New posts were established, some in the interior and some on the Pribilof Islands in the Bering Sea. Most, however, were in the Aleutians for use as bases in offensive operations. U.S. forces occupied Adak on 30 August and nearby Atka on 16 September 1942, where, as they huddled in foxholes, seeking shelter from ceaseless cold rain and biting wind, they learned the misery of the Aleutian fighting. By mid-September Army planes from a newly built airstrip on Adak were bombing Kiska, only 200 miles to the west.

The growth in air strength signaled the approaching battle in the Aleutians. In early 1943 a joint operation for ejecting the Japanese began. In January Army troops seized Amchitka, only 70 miles from Kiska, and constructed an airfield there. By mid-February the Eleventh Air Force was harassing the invaders whenever the weather would allow. An enemy relief convoy was driven off, and the coming of spring found the Japanese seemingly cut off from their homeland, with U.S. bases extending up to their front door. On 1 April

[14]Conn, Engelman, and Fairchild, *Guarding the Outposts*, pp. 58–61; Maurice Matloff and Edwin M. Snell, *Strategic Planning for Coalition Warfare, 1941–1942*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1953), pp. 224–25.

[15]CSurg, Alaska Def Cmd, Annual Rpt, 1942, p. 15, file 319.1–2; McNeil, "Medical Department in Alaska," p. 544, file 314.7–2 (Medical Activities) Alaska. Both in HUMEDS, RG 112, NARA. See also Conn, Engelman, and Fairchild, *Guarding the Outposts*, pp. 261–62. Underground operating rooms provided protection both from the enemy and the weather, and were constructed at several hospitals.

Nimitz and DeWitt issued a joint directive for the invasion of Attu.[16]

Basic to the preparations under way was the organization of an amphibious force to strike at the enemy. Doctrine for such a force derived primarily from Marine Corps thinking during the 1920s and, more especially, from the creation of the Fleet Marine Force in 1933. Marine experiments in amphibious warfare had grown up in the context of prewar plans that envisioned a fighting advance by the Navy across the Pacific in the event of war with Japan. The concept demanded advanced bases for refueling, supply, and repair, and suggested to marine officers a new function for their organization. The doctrine they developed had been accepted by the Navy, and, according to Marine Corps historians, "the War Department put the Navy text between Army covers and issued it [in 1941] as *Field Manual 31–5*."[17]

Amphibious warfare was not new, but the technique for making a successful attack by large modern forces against a hostile shore was one of the major military innovations of World War II. Complex problems in command, tactics, and supply had to be solved for such operations to work. During the approach to the target the naval commander was in charge of the attacking force; then, as the landing force advanced inland, the ground commander took charge. Medical care was likewise a joint endeavor. Aboard ship, the Navy took responsibility for the health and care of the entire force. When a landing was accomplished, control passed from one service to the other at the water's edge or the high-tide mark. Elements of the divisional medical battalion were designated to accompany the assault forces, followed by a carefully orchestrated succession of units that gradually built up a comprehensive Army-run medical system as the beachhead expanded. Eventually, hospital platoons gave the forces ashore the power to hold substantial numbers of casualties, obviating the need to evacuate that would have depleted their strength. In a successful operation, evacuation policy—that is, the number of days of treatment that could be given ashore—rose continuously from the first lodgment.

Clearly, much training was needed if officers and enlisted men of two services were to play well their roles in so complex a drama, staged under enemy fire. Like others, medical units had to learn the art of combat-loading their supplies, with the items they would need first on top in the holds. They had to provide medical personnel to assist the Navy in staffing landing craft that were marked for use as seagoing ambulances. At the same time, the medics had to learn the skills that all soldiers needed to get themselves and their basic equipment ashore, to organize their units, and to work under fire.

The 7th Infantry Division and other units destined to participate in the inva-

[16]Louis Morton, *Strategy and Command: The First Two Years*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1962), pp. 421–28; Conn, Engelman, and Fairchild, *Guarding the Outposts*, pp. 270–76; CSurg, Alaska Def Cmd, Annual Rpt, 1942, pp. 3–4, file 319.1–2, HUMEDS, RG 112, NARA. A good account of the war of the Aleutians can be found in Brian Garfield, *The Thousand-Mile War: World War II in Alaska and the Aleutians* (New York: Doubleday and Co., 1969).

[17]Frank O. Hough, Verle E. Ludwig, and Henry I. Shaw, Jr., *Pearl Harbor to Guadalcanal*, History of U.S. Marine Corps Operations in World War II (Washington, D.C.: Historical Branch, G–3 Division, Headquarters, U.S. Marine Corps, 1958), pp. 14–15 (quotation, p. 14).

sion trained under Marine guidance at Fort Ord, near Monterey. Using techniques developed during the Guadalcanal and North African campaigns, Maj. Gen. Holland M. Smith, USMC, director of the amphibious training course, led the 7th under its commander Maj. Gen. Albert E. Brown, who also was named commander of the landing force, through amphibious training that included wet and dry net practice, boat landings on Monterey Beach, training cruises, and landings elsewhere along the coast. General Brown's troops were organized into regimental landing teams, each composed of three autonomous battalion landing (or combat) teams. Each sailed on a single ship, accompanied by a platoon drawn from the collecting companies of the 7th Medical Battalion under Lt. Col. Robert J. Kamish, MC. Remembering the events at Guadalcanal, where the transports had been withdrawn soon after the landing, Lt. Col. Laurence A. Potter, MC, division surgeon and task force surgeon, divided the 14th and the 20th Field Hospitals into three platoons, each capable of operating independently as a 100-bed holding facility. Since combat impended, the hospital platoons were staffed with male nurses.[18]

Though rigorous, the training was deficient in some crucial ways. For one thing, the climatic conditions on the California coast were altogether unlike those the troops would face in the Aleutians. They practiced amphibious tactics but received no training in protecting themselves against the cold, and the medics learned nothing of the problems they would face in the mountainous country that lay ahead. Indeed, the training was directed almost wholly toward the landing and little toward the problems that would be faced once ashore. Some command decisions about equipment were ill-considered. In May Quartermaster Corps experts recommended the use of winterized boots called shoepacs, only to have the division commander select a leather boot instead. Clad in hoodless field jackets, rather than parkas, and in unlined woolen trousers that garrison troops in Alaska had already learned were too thin for the climate, the invading force departed with little understanding of the physical ordeal before them.[19]

Medical personnel were assigned their roles in the invasion. Aidmen and battalion medical sections sailed in the same ships as the units they supported. At each beachhead a single collecting platoon would go ashore with the first wave, to gather the wounded and administer first aid. Battalion medical sections would land with the fifth and sixth waves, to set up and operate the aid stations. As the battalions moved inland, the aid stations were to follow, leaving a few personnel on the beach to receive casualties

[18]Surg, 7th Inf Div, Annual Rpt (copy), 1943, pp. 2–3, file 319.1–2; Rpt (copy), Lt Col Robert J. Kamish, Cdr, 7th Med Bn, n.d., sub: Medical Evacuation on Attu, p. 1, file 319.1; Rpt (copy), Lt Col Laurence A. Potter, Surg, Task Force [51], 10 Jun 43, sub: Attu Operation, pp. 5–6, file 319.1; McNeil, "Medical Department in Alaska," pp. 555–57, file 314.7–2 (Medical Activities) Alaska. All in HUMEDS, RG 112, NARA. For a general discussion of amphibious medical support in the Pacific war, see Mary Ellen Condon-Rall, "Medical Aspects of Amphibious Operations Involving U.S. Army Forces During the War Against Japan," in Daniel M. Masterson, ed., *Naval History: The Sixth Symposium of the U.S. Naval Academy* (Wilmington, Del.: Scholarly Resources, 1987), pp. 276–88.

[19]Nelson L. Drummond, Jr., "The Attu Operation," 6 Jul 45, pp. 37–40, and Rpt, R & D Br, Mil Planning Div, OQMG, to Opns Br, Mil Planning Div, OQMG, 13 Oct 43, sub: Operations on Attu, The Historical Unit (THU) Note Cards, Historians files, HUMEDS, RG 112, NARA.



WINTER VIEW OF ATTU HOSPITAL FACILITY

until relieved. Litter-bearers from the collecting platoons followed to evacuate the aid stations. Last would come the division clearing company, divided into two platoons to support the major invading forces. With their arrival, the first small hospital-type facilities and their holding wards would be ashore on Attu. Shore party medical sections would take over care of the wounded on the beaches, delivering serious cases to the ships for evacuation. Field hospital platoons, each capable of independent action, would follow at the orders of the landing force commander.[20]

Of Attu itself and the enemy force little was known. Unsuited to agriculture and devoid of mineral resources, Attu had received slight attention in the past, except from a government geodetic survey that mapped its coastline. The interior was largely a blank, and aerial photographs yielded little because of the fog. "The loneliest spot this side of hell," the 40-by-20-mile island lies at the westernmost end of the Aleutian chain and has the same uninviting climate and terrain as the rest. The Japan Current moderates Attu's temperature at the price of causing dense fog and frequent storms, when "the wind relieves the monotony . . . by providing rain or snowfall in any combination of three directions: down, up, or horizontal." In the warmer months the snow melts, making the soil wet and boggy, and barely capable of holding a man, much less a vehicle. Above the treeless valleys loom ridges of bare rock and

[20]McNeil, "Medical Department in Alaska," pp. 554–57, file 314.7–2 (Medical Activities) Alaska, HUMEDS, RG 112, NARA. The contemporary doctrine and techniques of amphibious action are outlined in the Navy's *Landing Operations Doctrine, U.S. Navy, 1938*, and in the Army's *Medical Service in Joint Overseas Operations, Field Manual 8–25* (1940), and *Landing Operations on Hostile Shores, Field Manual 31–5* (1941).

patchy snow, and beyond is the "jumbled, barren mountain-mass of the interior," where peaks rise to 3,000 feet.[21]

Many soldiers must have thought the desolate island was not worth fighting for. But many died to secure it, in part because information on the Japanese defenders was scanty, including the fact that reinforcements had increased their number to about 2,400.[22]

Regaining Attu

Task Force 51, the armada of ships carrying the invasion forces to Attu, rendezvoused in late April at Cold Bay. General Brown's assault force totaled about 11,000, including a reserve landing force held in readiness on Adak for use if needed. Three bays indent the eastern coast of Attu: Massacre Bay in the south, Sarana in the middle, and Holtz in the north. The Japanese had concentrated on a rocky bulge of land between Sarana and Holtz Bays, where an airfield was under construction, and the Americans planned two major landings to envelop them.

On 4 May the task force, including warships, transports, and mine sweepers, left Cold Bay. Foul weather and high waves delayed the planned landing on the seventh, and, while the troops waited below decks in the rolling transports, Army planes from Amchitka hit Attu with ninety-five tons of bombs. Before dawn on 11 May, in thick fog, a party of scouts went ashore from U.S. submarines. The invasion was on.

By evening Brown's troops were landing in force on the shore of Massacre Bay, on beaches Blue and Yellow, and north of Holtz Bay, on beaches Red and Scarlet. The enemy, blinded by the fog, provided no opposition. By the end of D-day 1,500 soldiers were ashore in the north and 2,000 in the south. With no casualties to care for on the beaches, the medics methodically carried out their part of the plan. The collecting platoons of the 7th Medical Battalion landed and established contact with the combat team medics. Shore party medical sections relieved the collecting platoons on the beaches, allowing them to follow the combat teams in search of the enemy. All seemed to be going well.[23]

Hopes of a quick victory vanished in the days that followed. The Southern Landing Force was the first to meet trouble. The fog, lifting from the lowlands, clung to the upper slopes of the ridges, and rifle and mortar fire from above the fogline hit the Americans as they advanced up Massacre Valley from the beaches. Clearly visible in the treeless landscape to an enemy they could not see, they made slow and costly progress. By 13 May their advance had reached a stalemate in the passes leading out of the valley. Meanwhile, the Northern Landing Force bogged down as well. The troops from beach Red advanced along a ridgeline on the north shore of Holtz Bay, but the Japanese, driven off the high ground,

[21]McNeil, "Medical Department in Alaska," p. 548 (first quotation), file 314.7–2 (Medical Activities) Alaska, and CSurg, Alaska Def Cmd, Annual Rpt, 1942, p. 2 (second quotation), file 319.1–2, HUMEDS, RG 112, NARA; Conn, Engelman, and Fairchild, *Guarding the Outposts*, p. 280 (third quotation).

[22]Conn, Engelman, and Fairchild, *Guarding the Outposts*, pp. 279, 295.

[23]Rpt (copy), Kamish, n.d., pp. 1–2, file 319.1; McNeil, "Medical Department in Alaska," pp. 557–58, file 314.7–2 (Medical Activities) Alaska; Surg, 7th Inf Div, Annual Rpt (copy), 1943, pp. 2–3, file 319.1–2. All in HUMEDS, RG 112, NARA.

clung tenaciously to the reverse slope and gradually brought the invaders to a standstill.

As casualties mounted, medics and combat units alike faced the fact that two enemies were in the field, the Japanese and Attu itself. Both supply and evacuation were proving to be a nightmare. Until roads could be built, wheeled and even tracked vehicles sank into the wet and spongy tundra. Soldiers walked as if on mattresses of moss. Every needed article had to be hand-carried to the front from dumps on the beaches. There, disorder and confusion reigned. Officers and enlisted men "were forced to search along the beach for necessary equipment, stand guard over it afterward, and then carry it over almost impassable ground. . . ."[24]

Casualties had to be borne to the rear on litters, across the rocks and tundra, and the long litter hauls resulted in many deaths among head and abdominal cases. Soldiers died from internal hemorrhage only a few miles but many hours from treatment. Morphine syrettes, introduced on Attu, proved invaluable in keeping the wounded quiet and relatively pain-free during long rough hauls. Aside from morphine, the medic's best friend was the fog, which hid him and his patient from the foe—a fickle friend, however, apt to fade briefly before the pale Aleutian sun or blow away at critical moments. Litter-bearers worked at night, but in the late Arctic spring the hours of darkness were all too brief.

Nothing could lessen the combination of backbreaking labor and constant danger that was the litter-bearers' daily lot. The steep slopes of the ridges exhausted them, forcing medical officers to augment the squads from the customary four to six or even eight men. Inert, suffering bodies had to be manhandled through morasses and hauled by ropes up ridges of slippery bare rock under sniper and machine gun fire. Without cover, the bearers sometimes had to roll a casualty off the litter to lower his profile by a few inches. Additional bearers were drafted wherever they could be found, from the medical battalion, the hospitals, the shore parties, the Navy's corpsmen, or the line units. All were needed; over one especially difficult route, 400 bearers worked in relays to evacuate the wounded of three infantry battalions. Everywhere, the litter-bearers were targets themselves. The enemy fired on litter parties without mercy, obliging medical personnel to arm themselves, fight, and sometimes die for their patients.[25]

Forward treatment and evacuation were marked by many expedients. In the cold forward aid stations dried plasma proved to be a liability, hard to dissolve and likely to plug the needles. In consequence, most casualties received their first plasma at the clearing stations, which had moved close to the

[24]29th Field Hosp Annual Rpt (copy), 1943, p. 14 (quotation), file 319.1–2; McNeil, "Medical Department in Alaska," p. 559, file 314.7–2 (Medical Activities) Alaska. Both in HUMEDS, RG 112, NARA. See also Conn, Engelman, and Fairchild, *Guarding the Outposts*, pp. 288–91.

[25]Rpt (copy), Kamish, n.d., pp. 1–2, 14, file 319.1; McNeil, "Medical Department in Alaska," pp. 559–67, file 314.7–2 (Medical Activities) Alaska; Surg, 7th Inf Div, Annual Rpt (copy), 1943, p. 3, file 319.1–2; Rpt (copy), Potter, 10 Jun 43, pp. 2, 7, file 319.1; Rpt, Plt Cdr, 14th Field Hosp, to HQ, Task Gp 16.11, 16 Jun 43, sub: Brief Summary of the Highlights of Organization, pp. 1–2, Encl to 14th Field Hosp Annual Rpt (copy), 1943, file 319.1–2. All in HUMEDS, RG 112, NARA. Each syrette contained a half-grain dose.



MORPHINE SYRETTES; *below*, LITTER-BEARERS HAULING A CASUALTY OVER THE ATTU TUNDRA



fighting in order to shorten litter hauls. (The move also made them extremely vulnerable, as events were to show.) In the north the wounded were taken to a platoon of the 20th Field Hospital, situated at the base of a 250-foot cliff that rose a few hundred yards from the beach. Here, the medics had constructed an elevator—a caterpillar tractor on the clifftop that winched a 12- by 12-foot sled loaded with two litters down the long slippery slope. Because enemy fire restricted shore-to-ship evacuation, the platoon did much surgery ashore. The hospital's other two platoons landed at Massacre Bay, pitching a cluster of pyramidal tents in ankle- or knee-deep mud. By the end of the fighting its wards held 443 patients. The more serious cases were taken offshore by landing craft for treatment on shipboard, through pounding surf. Once they were aboard, Army ship hospital platoons and personnel of the 179th Station Hospital took over their care.

Gradually greater order emerged in the rear areas. The casualty who reached the hospital platoons was out of serious danger. As the field hospitals became established and X-ray equipment was brought ashore, evacuation policy was set at three weeks. Some longer-term cases—especially of cold injury and battle fatigue—were held on the island; Colonel Potter set up a convalescent hospital on the west side of Massacre Bay, where, at one point, 600 patients were under treatment. The seriously wounded were, for the most part, quickly evacuated. A few of the worst injured went by ship or plane to Adak for transfer to other Alaskan station hospitals, where preparations had been made to receive them. Most, however, were taken by Navy ship or plane direct to the zone of interior.[26]

The Japanese were still far from beaten. After four days of fighting, senior military leaders realized that they had underestimated the enemy. While General Brown demanded more troops and road-building equipment, the mounting evidence that his forces were bogged down convinced the North Pacific Fleet commander, Vice Admiral Thomas C. Kinkaid, to replace him. The new commander, Maj. Gen. Eugene M. Landrum, arrived on Attu on 16 May, just as the Northern Landing Force was breaking the deadlock around Holtz Bay. The next day the enemy retreated in the direction of Chichagof Harbor. Threatened in the rear, the Japanese force in the south that had been blocking one pass out of Massacre Valley also withdrew. By the twentieth the Southern Landing Force had cleared a second pass as well, and emerged from the valley. Then the two American pincers closed upon the enemy's last redoubt.[27]

Medical support by now had become easier. By 20 May engineer-built roads enabled tractors and jeeps to carry supplies forward from the beach and casualties back from relay stations, putting an end to many of the long litter hauls. Units already ashore advanced, and others landed. The complicated lines of evacuation were simplified. Additional slides were built, where tractors could

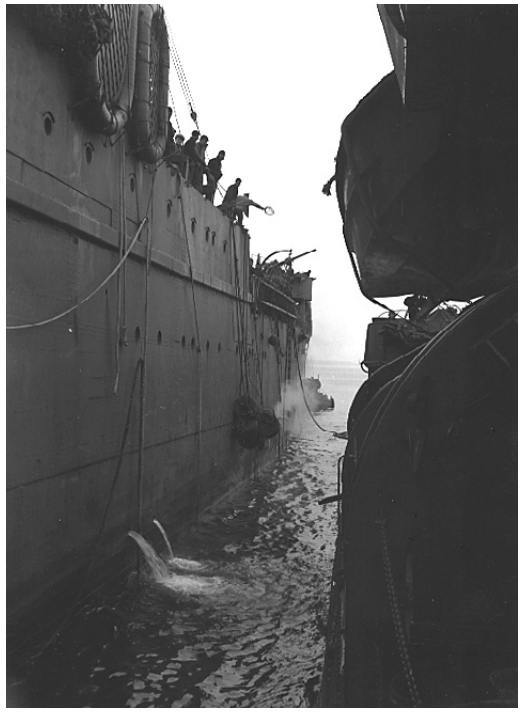
[26]Surg, 7th Inf Div, Annual Rpt (copy), 1943, p. 3, file 319.1–2; Rpt (copy), Potter, 10 Jun 43, pp. 3, 7, 9, file 319.1; 20th Field Hosp Annual Rpt (copy), 1943, p. 2, file 319.1–2; McNeil, "Medical Department in Alaska," pp. 568–72, file 314.7–2 (Medical Activities) Alaska. All in HUMEDS, RG 112, NARA.

[27]Conn, Engelman, and Fairchild, *Guarding the Outposts*, pp. 293–94; McNeil, "Medical Department in Alaska," pp. 552–53, file 314.7–2 (Medical Activities) Alaska, HUMEDS, RG 112, NARA.

lower sleds with their burden of litters down the more difficult slopes. Ahead, the line units continued to drive the Japanese slowly back. By the twenty-first the front line in the southern sector extended across Sarana Valley, and a clearing station moved up to Sarana Pass. Litter-bearers brought casualties from the battalion aid stations and relay posts across the valley floor and, by means of a slide, up a prominence nicknamed Engineer Hill to the clearing station in the pass. From a relay post at the brow of the hill, tractors and sleds picked up the casualties and hauled them back via Massacre Valley to the hospitals.

Three days later U.S. troops were fighting Japanese forces on a ridge west of Chichagof Valley, and collecting platoons were moving into the area. Soon tractors were operating across Sarana Valley to the slide. On 28 May the clearing station moved to one of the relay station sites on the Chichagof side of the Sarana Valley, leaving only a few medics behind at the old site on Engineer Hill. At the time, the new location did not seem especially perilous.[28]

Meanwhile, the collecting units in the north had been advancing with their infantry battalions. On 23 May medics set up a collecting station on the East Arm, an inlet of Holtz Bay. Casualties there were evacuated after treatment to the field hospital on the West Arm inlet by boat. On the twenty-fifth the northern and southern sectors met, enabling some northern casualties to be evacuated south, through a connecting pass. The Japanese were encircled, and the



OFFSHORE EVACUATION OF THE SERIOUSLY WOUNDED

lengthy ordeal of the troops fighting and freezing on Attu appeared to be drawing to an end. But the enemy had a surprise in store.[29]

At 0330 on 29 May 700–1,000 surviving Japanese charged the American lines, "screaming, killing, and being killed." Armed with rifles and bayonets on long poles, they overran American positions in the Chichagof area, including medical installations located in two ravines in Sarana Valley. The attackers slashed their way into tents filled with casualties. Despite the experience of

[28]Rpt (copy), Kamish, n.d., pp. 6–7, file 319.1; McNeil, "Medical Department in Alaska," pp. 573–74, file 314.7–2 (Medical Activities) Alaska. Both in HUMEDS, RG 112, NARA.

[29]Rpt (copy), Kamish, n.d., p. 10, file 319.1; McNeil, "Medical Department in Alaska," pp. 574, file 314.7–2 (Medical Activities) Alaska. Both in HUMEDS, RG 112, NARA.

days past, the medical units were unprotected either by the infantry or by defenses of their own. Medics, like their patients, lay helpless in sleeping bags and were stabbed to death through the bags and the canvas of their collapsing tents. Capt. John W. Bassett, MC, a clearing company commander, was shot and killed instantly while trying to organize a defense. Another officer woke from his sleep as a Japanese bayonet pierced his nose, tongue, and neck, pinning him to the ground; the attacker withdrew the weapon, and the officer miraculously escaped, wounded but alive. On top of the hill that bore their name, engineer troops finally stopped the Japanese near the site of the clearing station. But the enemy held much of the American rear area for the greater part of the day. In the fighting 19 medical officers and enlisted men were killed and 27 others wounded.[30]

Since the Japanese now blocked many evacuation routes, casualties of the heavy fighting could not be moved back. Medics at forward posts stayed with their patients; at the clearing station on Engineer Hill, almost encircled by the Japanese, treatment continued throughout the fighting. American forces counterattacked, and by sunset the enemy had retreated. The wounded from the valley floor began to move again by tractor-loads to the hilltop. By the next afternoon 238 wounded had reached the beaches of Massacre Bay. As for the Japanese, they had virtually ceased to exist. Though a few surviving snipers still had to be hunted down, the brief, bitter campaign was over.[31]

The Balance Sheet

Counting up their casualties and the bodies of the enemy, the Americans recorded some grim statistics. Out of a force totaling some 15,500 soldiers by the end of the campaign, 549 had been killed and 1,148 wounded. For the Japanese, 2,350 had been killed and 29 taken prisoner. The bitterness of the fighting was reflected in the fact that 71 Americans had been either killed or wounded for every 100 defenders on the island; only Iwo Jima was to exact a proportionately heavier toll. Sixty-nine percent of the American battle dead had perished of gunshot wounds. Some 12 percent were victims of the bayonet, in a war where much less than 1 percent was the norm—remarkable testimony to the price exacted by the enemy's final banzai charge. But battle injuries were not the whole story. More than 2,100 Americans had been put out of action by disease and nonbattle injuries. Total American casualties outnumbered the whole Japanese defense force by a ratio of 3 to 2.[32]

The medics had suffered their own losses—32 killed and 58 wounded, or about 7.5 percent of their personnel, more than half during the enemy's final charge. Though they had armed themselves by one means or another, their lack of training had made them ineffective

[30]Quotation from Conn, Engelman, and Fairchild, *Guarding the Outposts*, p. 294. See also Rpt (copy), Kamish, n.d., p. 7, file 319.1; McNeil, "Medical Department in Alaska," pp. 554, 575, file 314.7–2 (Medical Activities) Alaska. Both in HUMEDS, RG 112, NARA.

[31]McNeil, "Medical Department in Alaska," pp. 575–76, file 314.7–2 (Medical Activities) Alaska, HUMEDS, RG 112, NARA.

[32]Conn, Engelman, and Fairfield, *Guarding the Outposts*, p. 295; McNeil, "Medical Department in Alaska," pp. 577–78, file 314.7–2 (Medical Activities) Alaska, HUMEDS, RG 112, NARA.

fighters and a danger to themselves and others. Their relative helplessness provoked much bitter comment, causing Colonel Kamish to recommend "that medical troops operating against Japs be armed with a carbine and given adequate instruction in its use and in the use of hand grenades[;] that medical troops be instructed in security in the *battle zone*[;] that line commanders be impressed with the responsibility of guarding medical installations in their vicinity[; and] that Division Headquarters furnish such installations . . . fighting protection."[33]

The lack of experience and foresight that pervaded the whole Attu operation did not reflect on individual medics. Colonel Kamish wrote: "The [Medical] Battalion Command is proud that the line soldier, notoriously contemptuous of the Medical Corps, has nothing but praise for its members since the operations on Attu." War correspondent William Gillman was critical of the Army's overall performance, but he praised the medics for defending their patients at risk of their own lives when the enemy, bayonet in hand, stormed through the lines. "Everybody agreed that the medics were heroes," he declared. For its service during the battle, the 7th Medical Battalion received a presidential citation that hailed its "gallant efforts" and its achievements in evacuation under fire.[34]

Accomplishments and failings of the medical service on Attu showed up clearly by contrast with that of the enemy. Although the Japanese were virtually exterminated, and their medical equipment and installations destroyed, the Americans were able to piece together an instructive picture of their medical service. For first-echelon care, each company had one officer or noncommissioned officer and two enlisted men attached, with litter-bearers drawn from the combat troops when necessary. The next echelon consisted of a dressing station and an ambulance section to evacuate casualties to the rear. This echelon was variously called a medical unit, casualty clearing station, or divisional bearer section. During the battle the enemy set up such stations in tents in the forward areas; some semipermanent dispensaries, which accommodated perhaps 25 casualties each, were established in well-camouflaged structures that were dug into the ground. In one of these the Americans found 18 dead: The Japanese medical officer had killed his patients before he shot himself.

The next and highest Japanese medical echelon on Attu was the field hospital. At first the Japanese had evidently used a building on the eastern side of Holtz Bay; later, after converting the building into a barracks, they began construction of a new hospital further up Holtz Valley, where the Americans found only equipment stored. The enemy had also used as an aid station or hospital a large cave overlooking Holtz Bay. Total beds on the island were estimated at 200 for a garrison of 2,300—a respectable number by American standards.

The Japanese on Attu apparently suffered no epidemics, although pneumonia, tuberculosis, and dysentery cases had, on occasion, been evacuated from the island. On the other hand, medical

[33]Rpt (copy), Kamish, n.d., p. 19 (quotation), file 319.1; McNeil, "Medical Department in Alaska," p. 577, file 314.7–2 (Medical Activities) Alaska. Both in HUMEDS, RG 112, NARA.

[34]First quotation from Rpt (copy), Kamish, n.d., p. 16, file 319.1; second and third quotations as cited in McNeil, "Medical Department in Alaska," p. 577, file 314.7–2 (Medical Activities) Alaska. Both in HUMEDS, RG 112, NARA.

practice had been primitive. Recovered enemy medical officers' diaries and an interview with a captured Japanese medical sergeant supplied a wealth of details on enemy medical service. Medical officers and enlisted men carried first aid kits, containing instrument sets, an antiseptic—usually tincture of iodine—dressings and bandages, a few drugs, syringes in metal cases, and needles. No evidence could be found that the Japanese used sulfa drugs on Attu; they did not use plasma or give blood transfusions. Their surgeons performed major operations with local or spinal, rather than general, anesthetics. Faced with defeat, medical personnel sometimes injected the seriously wounded with morphine before the wounded committed suicide with hand grenades. Addiction, however, was rare among the Japanese soldiers, and popular stories that the frenzy of the banzai charge had been drug-induced were without foundation.

Preventive medicine was a curious melange. Japanese soldiers took creosote to prevent food poisoning and downed cod liver oil and vitamins as dietary supplements. A medical officer's diary recorded, "We are all taking vitamin pills. Cases of typhus and TB come up. We can take no chances." Other cases of the seemingly magical use of preventive measures were observed. The Japanese poured oil on pools of water, although Attu had no mosquitoes; the garrison reportedly had participated in the Burma campaign, and may have continued a practice learned there on the assumption that it was somehow related to health.[35]

In other respects, the Japanese had made intelligent efforts to preserve the health of their men. They chlorinated their water and followed their national custom of providing weathertight bathhouses with heated communal tubs. The clothing and boots of the Japanese soldiers were serviceable and warm, so much so that American soldiers sometimes took caps and footwear from the enemy dead at risk of being shot by their own comrades. Living and dead, Japanese soldiers showed no evidence of cold injury—a startling contrast to the Americans.[36]

Nonbattle injuries put more U.S. soldiers out of commission than the enemy did, and by far the greatest source of incapacitating injury was the wet cold of Attu. Average temperature in the valleys was a relatively mild 37°F., but on the ridges, where most of the fighting took place, the average was 24°, and nightly temperatures sank as low as 10°. As the fighting grew heavy, U.S. troops were pinned down for several days at a time in water-soaked foxholes, unable to exercise their feet and legs. Since the boggy tundra made evacuation difficult, many injured walked to aid stations on sore, swollen feet and in temperatures that averaged about 35°F.

Originally trained for desert fighting, the landing force troops were unable to cope with these problems. They had not been taught to remove their wet boots frequently, dry their socks and inner-

[35]Rpt (copy), ASurg, Advance CP, Alaska Def Cmd, to SG, U.S. Army, 22 Jul 43, sub: Japanese Medical Service, p. 3, file 319.1–1 (Bitner), HUMEDS, RG 112, NARA.

[36]Rpt (copy), ACofS, G–2, Alaska Def Cmd, to ACofS, G–2, Advance CP, Adak, Alaska Def Cmd, 17 Jul 43, sub: Japanese Medical Facilities on Attu, p. 3, file 319.1–1 (Fergusson), HUMEDS, RG 112, NARA. The Japanese use of creosote pills for internal antisepsis dates back to the Russo-Japanese war. For a good description of Japanese medicine on Attu, see Ronald V. May, "Battle at Attu—the Japanese Side," *Journal of the Council on America's Military Past* 13 (Dec 85): 3–9.

soles, and massage their feet to increase circulation. Lack of training interacted with equipment failures. The Alaska Defense Command, as already noted, issued the wrong boots and chose the wrong clothing for the wet, muddy Aleutian weather. The experience of three special units pointed up the importance of command errors. The 7th Scout Company and the 7th Cavalry Reconnaissance Troop landed on beach Scarlet; promptly lost their way; and, in the course of five days, suffered 401 cases of exposure. On the other hand, the Alaskan Scouts, a combat intelligence force that had been trained for the climate and terrain, fought the entire campaign wearing shoepacs and suffered only 1 case of cold injury.[37]

Soldiers on Attu suffered three types of cold injury—mild exposure, general exposure, and immersion or trench foot. Medics did not hospitalize cases of mild exposure, but returned them to duty after rest behind the lines and nourishment with warm drinks, whiskey, and food. Cases of general exposure went to the hospital; the 20th Field Hospital, for example, treated 116 cases during the battle. The same facility cared as well for 342 cases of exposure with trench foot. Although not life-threatening, trench foot was a disabling injury. Within twelve to fourteen hours after exposure, throbbing, tingling, cramping, and increasing numbness of the feet signaled the onset of the problem. The victims' feet swelled, turning blue or mottled blue and white and the soles waxy white; severe cases became painful and blistered. Many felt as if they were walking on wooden feet. The severity of injury was directly proportionate to the length of time that shoes and socks were worn unchanged.

In the field and convalescent hospitals, medics treated trench foot by bed rest, elevating the feet, and maintaining asepsis, allowing the feet to warm gradually without artificial heat. When the skin was broken, they gave the patient sulfadiazine orally to prevent infection. During the battle 1,242 cases were taken to the hospitals on the shore, and 241 severe cases were evacuated to the ships. Overall, the rate of cold injury for the twenty-two days of the campaign was equivalent to 1,301 per 1,000 troops per year. The ratio of wounded in action to cold injury equaled 1:1 at Attu, an unacceptable wastage of soldiers.[38]

Other nonbattle losses included the usual range of neuropsychiatric, gas-

[37]Rpt (copy), Potter, 10 Jun 43, pp. 5, 6, 8–9, file 319.1; McNeil, "Medical Department in Alaska," p. 582, file 314.7–2 (Medical Activities) Alaska. Both in HUMEDS, RG 112, NARA. See also Tom F. Whayne and Michael E. DeBakey, *Cold Injury, Ground Type*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1958), pp. 90–92; Albert Lesser, "Report on Immersion Foot Casualties From the Battle of Attu," *Annals of Surgery* 121 (Mar 45): 259; Constantin P. Yaglou and William L. Hawley, "Disabilities Due to Environmental and Climatic Factors," in Ebbe Curtis Hoff, ed., *Special Fields*, Medical Department, United States in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1969), pp. 242–44; Tom F. Whayne, "Clothing," in idem, *Personal Health Measures and Immunization*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, 1965), pp. 66–67; and R. H. Patterson, "Effect of Prolonged Wet and Cold on the Extremities," *Bulletin of the U.S. Army Medical Department* 75 (Apr 44): 62.

[38]20th Field Hosp Annual Rpt (copy), 1943, pp. 4, 7, file 319.1–2; Rpt (copy), Potter, 10 Jun 43, pp. 7–8, file 319.1; McNeil, "Medical Department in Alaska," pp. 581–84, file 314.7–2 (Medical Activities) Alaska. All in HUMEDS, RG 112, NARA. See also Patterson, "Effect on Extremities," p. 63; Whayne and DeBakey, *Cold Injury*, p. 94; Lesser, "Immersion Foot Casualties," p. 259; and Whayne, "Clothing," in Hoff, ed., *Personal Health Measures*, p. 66–67.

trointestinal, and respiratory cases. The 20th Field Hospital admitted 94 neuropsychiatric cases, a small number considering the conditions of the fight, only 29 of whom had to be evacuated from the island. The 46 cases of acute diarrhea treated at the same field hospital reflected the problems of sanitation in battle: Soldiers ate their rations from unwashed canteen cups, and sometimes failed to chlorinate their drinking water; streams, their source of drinking water, were also preferred spots for excretion, perhaps because of the protection offered by the banks. But these problems were minor, and despite the cold wet climate and the great number of exposure cases, respiratory ailments were few.[39]

In sum, Attu presented a picture both of high battle losses, resulting in part from intelligence failures that included ignorance of the terrain and enemy strength, and also of high nonbattle losses, many traceable to erroneous command decisions regarding the training, clothing, and equipment of the troops. The all but forgotten battle deserves to be remembered, among other things, as another painful step taken by American commanders on the way to learning the difficult art of protecting their soldiers in a worldwide war.

Regaining Kiska

After Attu, the last enemy toehold upon American soil to be recaptured was Kiska. Initially considered the main target for the American counterattack, Kiska had been bypassed because its defenses were deemed stronger than those on Attu. Hence, preparations to invade had been under way since before the Attu operation. In late 1942 assault forces began assembling at Fort Ord for amphibious training. Medical units emphasized rigorous physical conditioning for litter-bearers, and went through the usual exercises with the other troops as well: climbing down cargo nets; taking part in small-boat landings; and gaining familiarity with LSTs (landing ship, tank). Field hospital platoons were again to land with the units they supported.

Taking heed of the Attu lessons learned, and of intelligence estimates that about 10,000 enemy troops garrisoned Kiska, the Army doubled the size of the assault force to 34,400 ground troops, including 5,300 Canadians. All were commanded by Maj. Gen. Charles H. Corlett, U.S. Army. Units were added with experience in the type of fighting that had developed on Attu, including a mountain combat team, a regimental combat team from the Alaska Defense Command, and the tough 1st Special Service Force. The 17th Infantry, which had fought on Attu, took the place of a nonveteran infantry regiment. All of this introduced some confusion into medical planning, for different components were making ready in California, Canada, and Alaska. Advanced amphibious training continued at Adak and Amchitka even as Navy warships began to hurl shells at Kiska, and the Eleventh Air Force, using airstrips on Attu and the nearby island of Shemya, started bombing runs. The invasion was set for 15 August 1943.[40]

[39]20th Field Hospital Annual Rpt (copy), 1943, p. 4, file 319.1–2; McNeil, "Medical Department in Alaska," p. 584, file 314.7–2 (Medical Activities) Alaska. Both in HUMEDS, RG 112, NARA.

[40]Conn, Engelman, and Fairchild, *Guarding the Outposts*, pp. 295–96; McNeil, "Medical Department in Alaska," pp. 589–90, file 314.7–2 (Medical Activities) Alaska, HUMEDS, RG 112, NARA.



General Area Occupied by a Medical Battalion on Kiska

In making their plans the medics relied heavily upon reports from Attu, the advice of veterans of the Aleutian fighting, and lessons learned from amphibious operations in the South Pacific. Once again, they assumed that they had to provide care in case the Navy should be pulled away within thirty-six hours of the landing, as had happened on Guadalcanal. The danger of cold injury was treated with utmost seriousness by Corlett, and the troops were issued shoepacs, parkas, rain suits, water-resistant trousers, and face masks. All received instruction in caring for themselves, and especially for their feet; before the troops went ashore, they rubbed lanolin into their feet, and medical personnel performed a last-minute foot inspection. The medics went armed with the weapons they had fired at Fort Ord—carbines for officers and M–1 rifles for enlisted men. This time they were to have a fighting chance.

Nearly 3,000 medical personnel accompanied the invasion forces. Task force surgeon, Lt. Col. H. E. Bill, MC, with a staff of 4 officers and 6 enlisted men, operated out of Corlett's headquarters. Four landings were planned on two major sectors of the coast; hence, two medical officers from the 59th Medical Battalion acted as sector surgeons on the staffs of the sector commanders. In order to make self-sufficient the autonomous battalion landing groups—the basic tactical units of the campaign—the field medical units again had to be reorganized. The medical battalion was first expanded with additional collecting and clearing

companies, drawn from nondivisional sources, and then split into sections, which in turn were attached to the landing groups. This setup was even more radical than on Attu; the medical battalion ceased to exist for the duration of the campaign, no plans being made to reconstitute it as the assault forces converged.[41]

Hospital platoons were to carry ashore, in rucksacks and on packboards, enough supplies for thirty-six hours; other medical units were to take with them supplies for three days. Additional supplies, including medical maintenance units, were combat loaded on transports and cargo vessels for early debarkation. A supply depot on every beach was to distribute supplies to the troops. In case units became isolated, fifty-eight parachute packs were ready with morphine syrettes, heating pads, bandages, sulfa drugs, and brief instructions for use. Casualty estimates reflected the harsh experience of Attu; almost 2,500 were expected to die and 7,000 more to fall sick or be wounded. The Alaska Defense Command designated station hospitals to receive casualties—the 179th Station Hospital at Adak with 1,500 beds; Fort Richardson with another 800 beds, if needed; Forts Mears at Dutch Harbor, Randall at Cold Bay, and Greeley in Kodiak, with 300 beds each; and Fort Glenn at Umnak, with 100 beds. Further evacuation was to be by air and water from Adak to Seattle. The tactical and medical planning for Kiska grappled with the perceived reality—a large force of defenders who would fight to the death in a wilderness of fog, rocks, and tundra.[42]

Early on the morning of 15 August—it was that rarity, a fine Aleutian day—the amphibious force of nearly 100 ships under the command of Rear Admiral Francis W. Rockwell began arriving off Kiska, an island 25 miles long and less than 2 miles wide. Intelligence indicated that the enemy was concentrated on the eastern side, in the Kiska Harbor area and around Gertrude Cove. Hence, landings began on the island's west side. By 0840 landing craft were putting ashore the first troops of the Southern Landing Force, their destination the hills above the beach. Next morning, the Northern Landing Force landed at two beaches near Kiska volcano on the northwestern side of the island. As on Attu, the landings were unopposed. The weather rapidly returned to the Aleutian norm in the days that followed. But no one could find the Japanese. U.S. forces penetrated the mist-covered interior of Kiska, encountering no defenders and hearing only the shots of their own tense, trigger-happy men. At night they huddled in wind and rain, awaiting the enemy, and patrols fired on one another in the darkness, killing and wounding. Until 22 August the Americans searched for the Japanese in vain. Apparently, the enemy had evacuated the island, perhaps as early as 28 July; exploiting the Aleutian fog, Japanese cruisers and destroyers had carried away the entire garrison. Now with only the weather as the enemy, the troops on the beaches of Kiska smashed crates into kindling, appropriated tents and

[41]McNeil, "Medical Department in Alaska," pp. 594–97, file 314.7–2 (Medical Activities) Alaska; 59th Medical Bn War Diary, 1943, pp. 6–11, file 319.1. Both in HUMEDS, RG 112, NARA. See also G. Allen Lane, "Medical Experiences With the 13th Canadian Infantry Brigade at Kiska," *Journal of the Canadian Medical Services*, May 44, p. 284.

[42]McNeil, "Medical Department in Alaska," pp. 597, 599–600, file 314.7–2 (Medical Activities) Alaska, HUMEDS, RG 112, NARA.

stoves, and broke open medical supplies in search of whiskey.[43]

During the first days, as U.S. forces moved inland expecting to see the enemy, attached aidmen and part of a collecting company went with them to provide first-echelon care. In view of the casualties from friendly fire, the medics were needed. Carrying litters remained as difficult as ever, because of the boggy tundra and snow-covered hills. Other medical units followed. The field hospitals landed, pitched tents, gathered cots, and treated the first days' casualties. The 6th Field Hospital was able to provide definitive treatment within twenty-four hours of the first landing and X-ray service within three days. When it became clear that the enemy had evacuated the island, the field hospitals moved into the area around Gertrude Cove and Kiska Harbor. The following month they reorganized as station hospitals.

Meanwhile, most of the invasion force moved ashore, a total of 28,452 troops. Despite the lack of opposition, they, too, gave the medics some work to do, suffering a casualty rate of 2.7 per 1,000 troops per day. Accidents, friendly fire, booby traps, and land mine explosions accounted for most casualties, and trench foot for the rest. But for evident reasons, the nonbattle casualty rate was low. Of 130 diagnoses of trench foot, 76 came from the 17th Infantry, the consequence of injuries suffered on Attu. One man died of gas gangrene; another required the "inevitable appendectomy," which was performed in a hospital tent by the light of a gasoline lantern. Overall, 28 died, about a tenth of 1 percent of those who came ashore, as against the 30-percent casualties and 9-percent deaths that had been predicted for the invasion force as a whole.[44]

In deserting Kiska, the Japanese gave up their last foothold on Alaska. The threat of invasion vanished, though the enemy continued intermittent air activity over the Aleutians for another two months. On Attu, medics turned into builders, as they had on other Pacific islands, constructing sturdy huts to house the 328th Station Hospital that was to serve the garrison. Meanwhile, American planes based on Shemya Island shifted to the offensive, mounting an attack on the Japanese-held Kurile Islands. But serious fighting in the Aleutians was over.

The Alaskan theater remained inactive but not useless from the autumn of 1943 to the end of the war. The air raids on the Kuriles tied down hundreds of Japanese aircraft, and tens of thousands of Japanese troops prepared to oppose a possible American invasion. Nevertheless, in response to complaints by Secretary of War Stimson that too many doctors were being wasted there, Surgeon General Kirk reduced the fixed-bed requirement to 4 percent of total troop strength. Dispersion and distance, however, still required a more substantial medical establishment than numbers alone might have suggested. In most respects, the subsequent medical history of the territory was unremarkable, except for a brief flur-

[43]Ibid., p. 603, file 314.7–2 (Medical Activities) Alaska; 30th Field Hosp Annual Rpt (copy), 1943, pp. 9–11, file 319.1–2. Both in HUMEDS, RG 112, NARA. See also Conn, Engelman, and Fairchild, *Guarding the Outposts*, pp. 297–98, and Samuel Eliot Morison, *History of United States Naval Operations in World War II*, 15 vols. (Boston: Little, Brown and Co., 1964), 7:62–63.

[44]McNeil, "Medical Department in Alaska," pp. 606–08 (quotation, p. 606), file 314.7–2 (Medical Activities) Alaska; Rpt (copy), Potter, 10 Jun 43, p. 8, file 319.1. Both in HUMEDS, RG 112, NARA. Cold injury, by damaging the tissues, predisposes to subsequent injury. See Lane, "Medical Experiences," p. 287.

ry over Japanese balloons in the last year of the war. Colonel Moore was named anti-biological warfare officer on the supposition, which proved baseless, that the balloons, launched from the enemy's home islands, might carry biological weapons.[45]

Beginning with serious blunders, the nation's third amphibious campaign of World War II ended with an attack upon a deserted island. Yet the preparations for the Kiska invasion showed both willingness and capacity to learn from the mistakes of the past. The techniques of amphibious warfare were steadily being refined, and in the South and Southwest Pacific—less than a year after Guadalcanal, and only a few months after Attu—were applied with impressive competence in a series of victories in the Solomons, New Guinea, and nearby islands.

[45]Ltrs, Henry L. Stimson, SofW, to Maj Gen Norman T. Kirk, SG, U.S. Army, 20 Nov 43, and Kirk to Stimson, 23 Nov 43, THU Note Cards, Historians files; 20th Field Hosp Annual Rpt (copy), 1943, p. 3, file 319.1–2; 6th Field Hosp Annual Rpt (copy), 1943, pp. 6–7, file 319.1–2; Scioto Herndon, "Organization of the Medical Service in the Defense Commands, 1942–1945," pp. 36–37, file 314.7. All in HUMEDS, RG 112, NARA. Some personal accounts of medical activities on Attu can be found in the War Department's publication *The Capture of Attu as Told by the Men Who Fought There* (Washington, D.C: Infantry Journal Press, 1944).

CHAPTER VI

Amphibious Advance

The closing of the Papuan and Guadalcanal campaigns left the forces of General MacArthur's Southwest Pacific Area (SWPA) and Admiral Halsey's South Pacific Area (SPA) free to embark on new efforts against the Japanese. The enemy's stronghold was his fortified base at Rabaul on New Britain, a large island separated from the northeastern coast of New Guinea by the Vitiaz Strait.

At the Casablanca Conference in early 1943 the Allies decided on new advances in the region. The Joint Chiefs devised an arrangement by which Halsey would command a new advance up the Solomon chain under the general direction of MacArthur, while the latter's own forces would simultaneously resume their fighting advance westward along New Guinea's north coast, exploiting the sea to avoid endless slogging through jungles and mountains. Southwest Pacific forces would fight in New Guinea, New Britain, and the Admiralty Islands, while South Pacific troops would engage the enemy in the Solomons. Ground forces from both theaters would secure the Woodlark and Kiriwina Islands off Papua. The pincer movement resulting from these campaigns would gradually isolate and strategically encircle Rabaul, whose conquest was the ultimate objective of both commanders. In April at a conference in Brisbane, MacArthur and Halsey agreed on a plan that aimed at the capture of successive forward air bases. The complex operations involved received the code name CARTWHEEL.[1]

Troops of both theaters would be obliged to fight once again in New Guinea and the Solomon Islands, with their harsh mountains, roadless jungles, and tropical diseases that included malaria, dengue, and scrub typhus. Yet by mid-1943 the SWPA medical service was better able to support combat operations. Hard lessons had been learned in preventive medicine; amphibious support techniques were rapidly improving, with many landing craft to double as floating ambulances or hospital ships; and the 2d Engineer Special Brigade, with its own medical

[1]John Miller, jr., *CARTWHEEL: The Reduction of Rabaul*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, 1959), pp. 1–19, 26–27; Samuel Eliot Morison, *History of United States Naval Operations in World War II*, 15 vols. (Boston: Little, Brown and Co., 1947–62), 6:95–96; D. Clayton James, *The Years of MacArthur*, 3 vols. (Boston: Houghton Mifflin Co., 1970–85), 2:308. Unless otherwise noted, the framework of strategy and military events for this chapter is drawn from these sources.

battalion, the 262d, had arrived to move troops ashore, to organize the beaches, and to provide smooth evacuation to ships offshore. In the South Pacific Area, by contrast, whether because of the complex command arrangements or some other factor, the opening battles would show that the SPA medical service had fallen behind in its planning and preparations.[2]

While the forces assembled and trained, the theater surgeons brought in replacements, requisitioned supplies, and did preliminary planning for hospitalization, sanitation, and malaria control. Since the USASOS was responsible for the logistical support of American ground forces in the Southwest Pacific Area, Carroll, as the chief surgeon, and his staff provided medical support for the coming campaign, including base development. On 15 June the forward echelon of the Sixth Army surgeon's office was redesignated as the Office of the Surgeon, ALAMO Force, an organization under the direct command of General MacArthur.[3] Sixth Army surgeon Colonel Hagins, assisted by I Corps surgeon Colonel Miehe, planned tactical medical support and coordinated the medical services of Army, Navy, and Marine units. Both Hagins and Miehe kept in close contact with Colonel Kennard, the senior flight surgeon, and with Navy Capt. Albert T. Walker, MC, the surgeon of Rear Admiral Daniel E. Barbey's VII Amphibious Force.[4]

CARTWHEEL Opens

CARTWHEEL opened at the end of June with three simultaneous thrusts. In the first, SPA and SWPA forces seized Woodlark and Kiriwina, "practically virgin jungle islands" off Papua's northeastern coast, and built bomber bases to strike at the Solomons and Rabaul. In the second, mounted from the New Guinea coastal town of Morobe, a battalion combat team of the 162d Infantry, 41st Infantry Division, landed at Nassau Bay in heavy seas and blinding rain, aiming at the Japanese-held town of Salamaua. Here, medical support was provided by the 116th Medical Battalion—its collecting company and a platoon of its clearing company—and by three portable surgical hospitals, one for each battalion combat team. The clearing platoon remained at Morobe. The other medical units accompanied the combat team; they advanced in single file along narrow coastal trails to join an Australian brigade fighting its way northeastward from Wau. Reinforced by the rest of the 162d Infantry, the com-

[2]On the development of landing craft, see Frank O. Hough, Verle E. Ludwig, and Henry I. Shaw, Jr., *Pearl Harbor to Guadalcanal*, History of U.S Marine Corps Operations in World War II (Washington, D.C.: Historical Branch, G–3 Division, Headquarters, U.S. Marine Corps, 1958), pp. 23–34. On the engineer brigades, see William F. Heavey, *Down Ramp! The Story of the Army Amphibian Engineers* (Washington, D.C.: Infantry Journal Press, 1947). The 3d and 4th Engineer Special Brigades followed at the end of 1943 and in mid-1944, respectively.

[3]The ALAMO Force, an independent tactical organization virtually interchangeable with the Sixth Army, was MacArthur's way of evading the creation of a true combined command by isolating the Australian ground force commander, General Sir Thomas Blamey. For a personal view of MacArthur as a leader, strategist, and friend, see Roger O. Egeberg, *General MacArthur and the Man He Called "Doc"* (New York: Hippocrene Books, 1983). Egeberg was MacArthur's physician.

[4]Buell Whitehill, "Administrative History of Medical Activities in the Middle Pacific," block 18g, pp. 52–53, file 314.7; Rpt, Surg, Alamo Force, 30 Sep 43, sub: Medical Activities, p. 1, The Historical Unit (THU) Note Cards, Historians files. Both in Historical Unit Medical Detachment (HUMEDS), Record Group (RG) 112, National Archives and Records Administration (NARA), Washington, D.C.

bined force under Australian command fought an enemy dug in along the tops of steep jungle-covered ridges.[5]

From battalion aid stations casualties were carried by native litter-bearers to the beach. "Over trails hardly wide enough for a man to walk," wrote the 41st Division historian, "skirting cliffs often five hundred feet high, they carried the wounded safely and gently. Always there was the soothing comment, 'Sorry Boss,' at the lightest jolt of the litter." On the shore a collecting platoon and portable surgical hospitals stood ready with operating rooms dug into the sand, embanked with logs or sandbags and covered with tents. In the later stages of the Salamaua fight the 24th Portable Surgical Hospital moved inland to aid the Australians, sending its transportable wounded to the coast over the same steep and winding trails. Both supply and evacuation were by landing craft, which continuously provided support from the sea. Salamaua fell on 12 September, but the cost was high: The 162d Infantry lost 102 killed and 447 wounded, and malaria, dysentery, and skin infections further reduced its troops from 2,554 to 1,763.[6]

While the Japanese still resisted at Salamaua, the Australian 9th Division stormed ashore to the enemy's rear, near Lae. Medics of the two Allies each had their assigned tasks. Australian organic medical units—regimental aid posts and an advanced dressing station—accompanied the assault troops. Forty minutes after H-hour the 532d Engineer Boat and Shore Regiment of the 2d Engineer Special Brigade came ashore in its own landing craft (all other vessels were provided by the Navy's VII Amphibious Force) to organize the beach and bulldoze a road inland through the cocoanut groves that lay beyond. The regimental medical detachment set up aid stations on the sand, and a medical company of the 262d Medical Battalion established a clearing station beside the central axis of the beach. Medics unloaded and carried their own equipment; all went armed with rifles, pistols, or carbines. The only potentially serious foul-up was a breakdown in communication with the Navy. Fearing enemy bombers at Morobe, the large troop carriers—LSTs (landing ship, tank) and LCIs (landing craft, infantry)—were rerouted to Buna, a fact discovered by a medical officer from the Sixth Army headquarters, who instructed the 262d to shift medical resupply down the coast.[7]

Then American paratroopers of the 503d Parachute Infantry descended on an enemy airstrip at inland Nadzab, in the Markham River valley. Their C–47s came in low and fast, and each jumped with some 90 pounds of equipment. Many drifted into the jungle, snagging their chutes in the tops of trees. Natives again helped to retrieve casualties, and prompt action by the regimental medical detachment in administering blood

[5]Surg, Med Det, 112th Cav, Quarterly Rpt, Jul–Sep 43, p. 1, THU Note Cards, Historians files; Surg, 41st Inf Div, Quarterly Rpt, Apr–Jun 43, p. 1, file 319.1. Both in HUMEDS, RG 112, NARA.

[6]Quotations from William F. McCartney, *The Jungleers: A History of the 41st Infantry Division* (Washington, D.C.: Infantry Journal Press, 1948), p. 55. Statistics from Miller, *CARTWHEEL*, p. 202. See also 116th Med Bn Diary, 1 Jul–5 Oct 43, file 319.1 (116th Medical Battalion Diary) 14 Dec 42–30 Oct 43; Notes on Surg, Med Det, 162d Inf, Sanitary Rpt, Aug–Sep 43, pp. 1–2, and on idem, Quarterly Rpt, Jul–Sep 43, pp. 1–2, Historians files. All in HUMEDS, RG 112, NARA.

[7]Rpt, Maj Albert M. Dashiell, 14 Sep 43, sub: Landing Operations, THU Note Cards, Historians files, HUMEDS, RG 112, NARA.



MEDICS ADMINISTERING PLASMA

plasma saved many lives. Three died and 34 were injured in the jump; skirmishing on the ground cost an additional 8 killed and 12 wounded—all in all, a small price for a major prize.[8]

A few weeks later the Australians, supported by the 2d Engineer Special Brigade and by Company B, 262d Medical Battalion, landed on the tip of the Huon Peninsula, capturing Finschhafen on 2 October (*see Map 8*). Again the Navy provided partially converted LST–Hs, each carrying a naval medical officer and equipment for emergency surgery. A medical corpsman rode each of the smaller "Higgins boats," landing craft with drawbridge bows. The assault force was without dedicated hospital ships, but one LST—number 464—was converted into a 175-bed hospital to care for casualties from the landing beaches and transport them to Milne Bay. Six to eight Navy medical officers and about forty corpsmen staffed the vessel.[9]

The Japanese fought back with vigor, both on the ground and with heavy air raids from fields in New Guinea and Rabaul. Casualties were evacuated to the beaches during the hours of darkness, a

[8]503d Parachute Inf Quarterly Rpt (copy), Jul–Sep 43, file 319.1, HUMEDS, RG 112, NARA.

[9]"Seventh Amphibious Force Command History, 10 January 1943–23 December 1945," pp. 65, 76–77, file 314.7 (7th Amphibious Force) SWPA; Surg, 2d Engr Spec Bde, Quarterly Rpt (copy), Jul–Sep 43, pp. 11, 13. Both in HUMEDS, RG 112, NARA. See also Alan S. Walker, *The Island Campaigns*, Australia in the War of 1939–1945, Series 5, Medical (Canberra: Australian War Memorial, 1957), p. 182. The partially converted LST–H also was used in the New Britain and Hollandia campaigns, which are discussed later in this chapter.

tedious task complicated by blackouts, continuous rain, and muddy roads. When jeeps and even high-wheeled Australian ambulances could not get through, native litter-bearers hand-carried the wounded, sometimes for three hours or more, on rough corduroy tracks laid down over the mud. Throughout the operations from Nassau Bay to Finschhafen, litters also were used to transport those suffering from the familiar New Guinea triad of dysentery, malaria, and scrub typhus. Malaria was commoner among the Australian forces, whose personal malaria discipline was, despite officer supervision, often lax—for example, mosquito nets were routinely discarded. But sickness was not serious enough to interfere with operations. By the end of 1943 MacArthur's forces controlled most of the Huon Peninsula, and with it Vitiaz Strait, the strategic waterway that separated New Guinea from Japanese-held New Britain.[10]

Despite SWPA's growing competence in amphibious warfare, the campaign underlined a need for further refinements. Problems in coordinating the movement of casualties showed that a naval medical officer should be attached to the beach party to act as liaison with Navy evacuation craft. "Such an officer," noted the VII Amphibious Force historian, "would be familiar with the capacities of ships, the medical specialties available in them, and able to classify and move the wounded quickly." Forward bed strength proved to be inadequate. Despite the diversion of some wounded farther down the coast, the 190 beds in the clearing station at Morobe were overwhelmed, with an average occupancy rate of 87 percent. Such problems indicated that the lack of a functional chief surgeon was felt not so much in the planning phases of an operation but rather in the later periods, when a single coordinating authority was needed to make readjustments to meet unexpected events. Overall, however, the joint and combined operations had brought a brilliant success, in which the medics fully shared.[11]

New Georgia

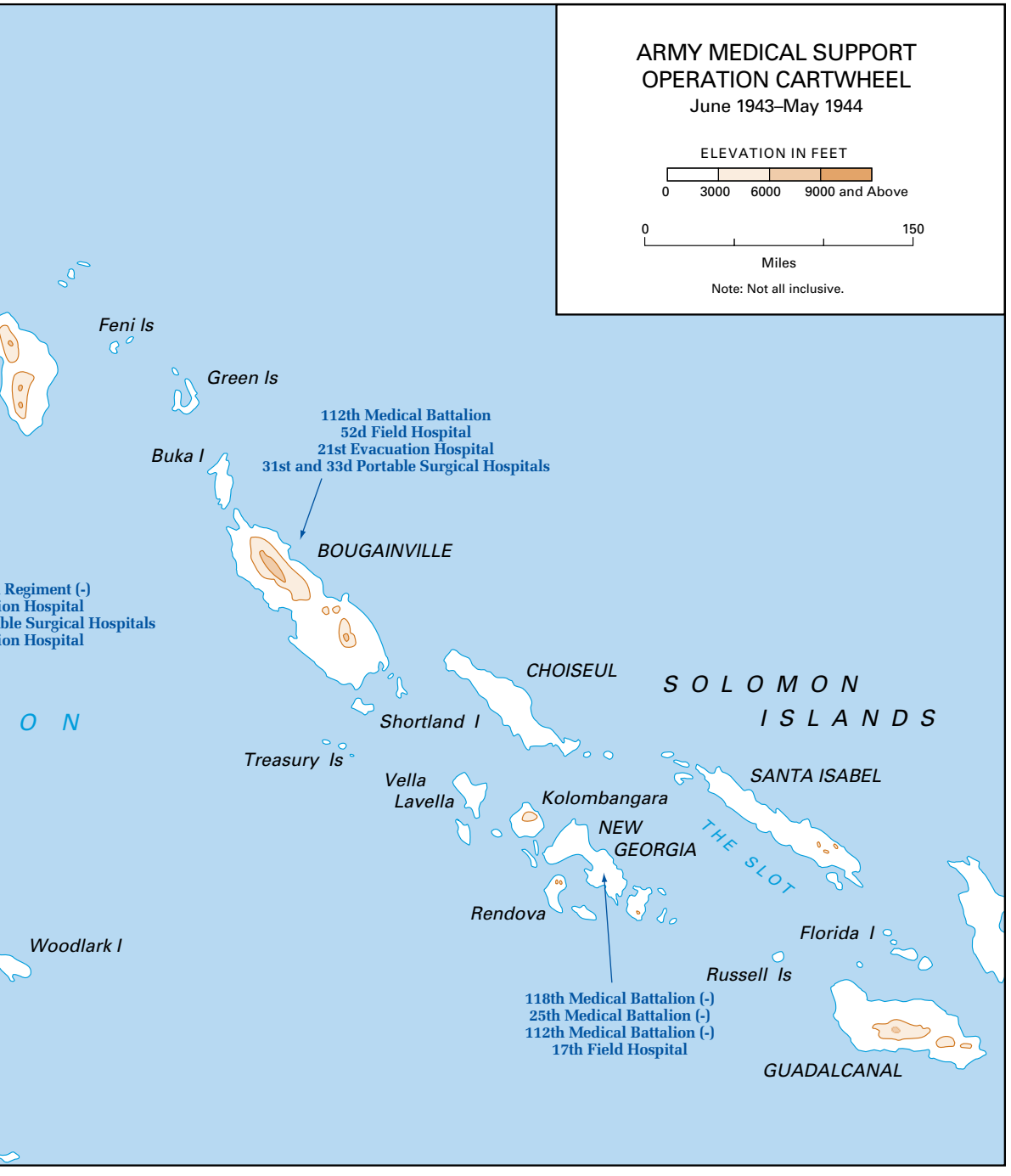
Meanwhile, the marines and soldiers of the South Pacific Area, advancing against the enemy-held islands of the Solomons, fought a more wearing campaign with less adequate medical support. The loss of Guadalcanal moved the Japanese to strengthen their forces in the central and northern Solomons. The new objective for American forces was New Georgia, the largest island group in the archipelago. The main island of New Georgia measures 45 miles along its northwest-southeast axis; to the south, west, and northwest smaller islands cling like satellites, among them Kolombangara, Arundel, Rendova, and Vangunu. A threatening environment awaited America's fighting men, and strong

[10]Walker, *Island Campaigns*, pp. 169–89; App. S, Medical, to 7th Australian Div Opns Rpt, 1–16 Sep 43, pp. 199–204, file 98 GHQ 1–3, box 857, RG 407, NARA; Department of the Navy, Bureau of Medicine and Surgery, "The United States Navy Medical Department at War, 1941–1945," 1:188–90, files of Bureau of Medicine and Surgery Archives (BMSA), Washington, D.C. See also Surg, 2d Engr Spec Bde, Quarterly Rpt (copy), Jul–Sep 43, pp. 8–14, and 22d Port Surg Hosp Quarterly Rpt, Jul–Sep 43, pp. 3–5, file 319.1, HUMEDS, RG 112, NARA.

[11]"Seventh Amphibious Force History," p. 65 (quotations), file 314.7 (7th Amphibious Force) SWPA; Surg, Med Det, 162d Inf, Quarterly Rpt, Jul–Sep 43, THU Note Cards, Historians files. Both in HUMEDS, RG 112, NARA.


1st Medical Squadron
603d Medical Clearing Company
58th Evacuation Hospital
27th and 30th Portable Surgical Hospitals
52d Malaria Control Unit
28th Malaria Survey Unit
ADMIRALTY IS
NEW IRELAND
BISMARCK ARCHIPELAGO
Rabaul
107th Medical Battalion (-)
262d Medical Battalion (-)
670th Medical Clearing Company (-)
5th, 6th, 8th, 13th, 17th, and 22d Portable Surgical Hospitals
23d Field Hospital
5th Malaria Survey Unit
Madang
Cape Gloucester
Saidor
NEW BRITAIN
135th Medical
29th Evacuati
6th, 8th, and 13th Porta
30th Evacuati
Arawe
Huon Peninsula
Finschhafen
NORTHEAST NEW GUINEA
Lae
Huon Gulf
116th Medical Battalion (-)
262d Medical Battalion (-)
10th, 16th, and 24th Portable Surgical Hospitals
Medical Detachment, 532d Engineer Boat and Shore Regiment
Salamaua
Wau
SOLOM
SEA
Kiriwina I
Gona
Buna
Dobodura
OWEN STANLEY RANGE
Kokoda
Goodenough I
D'ENTRECASTEAUX ISLANDS
Port Moresby
Milne Bay

MAP 8


ARMY MEDICAL SUPPORT
OPERATION CARTWHEEL
June 1943–May 1944
ELEVATION IN FEET
0
3000
6000
9000 and Above
0
150
Miles
Note: Not all inclusive.
Feni Is
Green Is
112th Medical Battalion
52d Field Hospital
21st Evacuation Hospital
31st and 33d Portable Surgical Hospitals
Buka I
BOUGAINVILLE
Regiment (-)
ion Hospital
ble Surgical Hospitals
ion Hospital
O N
CHOISEUL
S O L O M O N
I S L A N D S
Shortland I
Treasury Is
Vella
Lavella
Kolombangara
SANTA ISABEL
NEW
GEORGIA
THE SLOT
Rendova
Florida I
Woodlark I
Russell Is
118th Medical Battalion (-)
25th Medical Battalion (-)
112th Medical Battalion (-)
17th Field Hospital
GUADALCANAL

Japanese units garrisoned the natural harbors as well as the airfields on Kolombangara, Vangunu, and New Georgia's Munda Point.

Colonel Maxwell, the USAFISPA chief surgeon, prepared for an advance against New Georgia with the assistance of Col. Franklin T. Hallam, MC, the XIV Corps surgeon. Responsible for tactical coordination of the medical services of the Army and the Navy, Hallam established good working relations with the senior medical officers of both services and the restive Army Air Forces. But even as ships headed north from bases in the Russell Islands and Guadalcanal, deficiencies in medical manpower cast shadows over the large, complex campaign that lay ahead. Maxwell had not yet adopted SWPA's innovation of the portable surgical hospital, and the 43d Infantry Division entered battle some 30–35 percent understrength in medical personnel, both officer and enlisted—a forbidding statistic, given the primitive tropical terrain where both soldiers and marines would have to fight. The medical evacuation plan relied on support by a single clearing company, which would act as the division hospital, and by two collecting companies. For the moment, the 17th Field Hospital remained on call in the Russells.[12]

On the night of 29–30 June elements of the 43d Division, supported by the collecting companies of its 118th Medical Battalion, made simultaneous landings on Rendova, southern New Georgia, and Vangunu. Bitter fights in sodden jungles and flooded marshes yielded control of important anchorages as staging areas for further action. The enemy garrison on Rendova scattered, and the clearing company and Collecting Company C set up there. But Japanese air attacks wreaked havoc on American supply dumps along the beach, destroying most of the clearing station's equipment. For a time only emergency treatment could be given, and wounded waited twenty-four hours or more for hospital care on Guadalcanal. Of all deaths by enemy action sustained during the campaign, 50 percent occurred in the first two weeks.

Leaving the clearing company to replace its equipment, the 43d Division's 172d and 169th Infantry, supported only by a few collecting platoons, crossed Blanche Channel to northwest New Georgia, aiming an assault at Munda airfield. Meanwhile, a mixed force of soldiers and marines from Guadalcanal landed north of Munda to cut Japanese communications. On both fronts jungle fighting at its worst ensued. The troops pushed their way through trackless terrain, alternately steep and swampy. Mud, heat, and unceasing rain slowed progress. All the dismal complications of diarrhea, dysentery, and skin infections harassed the men. Malaria, despite rigorous control measures, was a constant problem for units whose soldiers were already infected when they came ashore. Fatigue, danger, and sickness brought on stress reactions; tension was unrelenting, for the enemy skillfully infiltrated American lines at night. Even veterans were subject to strange delusions: "In their minds, the phosphorescence of rotten logs became Japanese signals. The smell of the jungle became poison gas. . . . The slithering of the many land crabs

[12]Memo, Lt Col H. S. Tubbs to CofS, USAFISPA, 6 Jun 43, sub: Planning New Georgia Operation, THU Note Cards, HUMEDS, RG 112, NARA.

was interpreted as the sound of approaching Japanese."[13]

In the darkness the troops fired their weapons and hurled grenades blindly. Almost 16 percent of casualties were later judged to have been caused by friendly fire—a high proportion, even for jungle fighting. Neuropsychiatric casualties were many; the 169th Infantry alone suffered 700 by 31 July. Contributing to a crisis in morale were hunger and the difficulty of getting the wounded to treatment. Since the absence of roads prohibited the use of vehicles, except jeeps on the wider trails, some regiments had to carry forward their own ammunition, supplies, and casualties. The clearing station on Rendova was quickly overwhelmed, exposing the inadequacy of medical support for the bruising battle.[14]

Soon the theater command realized that the New Georgia front must be revitalized, new tactics developed, and a more efficient supply system established. At the urging of General Harmon, the USAFISPA commander, Admiral Halsey ordered the XIV Corps staff to New Georgia to take over supply, administration, and planning. On 11 July Maj. Gen. Oscar W. Griswold, the corps commander, arrived on Rendova. Shortly afterward, elements of the 25th Infantry and 37th Infantry Divisions were ordered in, and on 17 July Griswold took command of the expanded New Georgia forces. Medical support was likewise enlarged, with the newly arrived 25th Division supported by its 25th Medical Battalion and the 37th Division by its 112th Medical Battalion. On 28 July the 17th Field Hospital landed and opened on the islet of Kokorana, off Rendova (*see Map 8*). (A Navy malaria control unit had landed two weeks earlier, surveyed campsites, and oiled troop bivouac areas.)[15]

Meanwhile, a new offensive began, employing infantry, tanks, flamethrowers, and artillery support. Fighting as difficult and bloody as any on Guadalcanal followed before Griswold's forces secured Munda airfield on 6 August. Mopping-up operations and seizure of the nearby islands of Vella Lavella and Arundel took another six weeks. Between 23 July and 10 September the 112th Medical Battalion alone treated more than 3,000 cases, including almost 1,000 battle casualties.[16]

The four-month campaign for the central Solomons was over, but at a heavy cost. American battle casualties totaled 1,094 dead and 3,873 wounded; added to the victims of accident, disease, and stress, more than 8,300 casualties were evacuated during July, August, and September. As the initial invasion force, the 43d Division suffered the most; its 172d Infantry counted 1,550 wounded or sick, 777 from a single battalion. The Japanese numbered about 2,500 dead, and successfully evacuated some 9,400 others. They lost the fight, but had perhaps more reason than the

[13]Quotation from Miller, *CARTWHEEL*, pp. 108–09. See also ASF [Army Service Forces] Monthly Progress Rpt, 30 Nov 43, sec. 7, p. 8, THU Note Cards, Historians files, HUMEDS, RG 112, NARA.

[14]Rpt, Surg, XIV Corps, to CSurg, USAFISPA, 31 Oct 43, sub: Medical Service, New Georgia Campaign, p. 32, Encl to 1st End, CSurg, USAFISPA, to SG, U.S. Army, 11 Nov 43, file 370 (Medical Service, New Georgia Campaign) SPA, HUMEDS, RG 112, NARA.

[15]112th Med Bn Annual Rpt, 1943, p. 4, THU Note Cards, Historians files; CSurg, USAFISPA, Annual Rpt, 1943, pp. 9–10, file 319.1–2. Both in HUMEDS, RG 112, NARA. See also "Navy Medical Department at War," 1:109, BMSA.

[16]112th Med Bn Annual Rpt, 1943, p. 4, THU Note Cards, Historians files, HUMEDS, RG 112, NARA.

Americans to be satisfied with the behavior of their troops and the skill of their leaders. In the words of Samuel Eliot Morison: "We had Munda, and we needed it for the next move toward Rabaul; but we certainly took it the hard way."[17]

Medical Support

The long catalogue of medical problems began with a shortage of not only leaders but those with essential skills. Competent surgeons were particularly scarce. At least 90 percent of the medical officers sent to the South Pacific Area as replacements had little or no field training and no combat experience. Tyros were assigned to battalion aid stations or to clearing stations, while senior medical officers shifted their small supply of qualified surgeons to the most critical positions. Officers of the Dental, Veterinary, and Medical Administrative Corps filled nonclinical jobs and, in some cases, devoted full time to the management of evacuation. Despite such expedients, the wounded suffered, a report of 4 November noting "improper treatment of war wounds due to the inexperience and lack of training of the medical officers who first treat the casualties."[18]

Fundamental problems in supply underlay other difficulties. After ordering far in excess of its needs, the 43d Division had left the bulk of its medical supplies behind in the Russell Islands, or on Guadalcanal, indiscriminately dumped on the beaches awaiting transportation. Since ships were scarce, and supplies improperly labeled, many necessary items never arrived at all, including most of the division's medical maintenance units and hence its resupply capability. Often what did arrive could not be found; careless marking of containers resulted in medical supplies becoming mixed with rations, fuel, and ammunition. Within three days of the initial landing, emergency requisitions had to be forwarded to Guadalcanal, and only prompt action by the depot there made it possible for the division to receive its medical supplies.

Units that arrived later handled medical supply better, and Colonel Hallam, after arriving on New Georgia with the XIV Corps headquarters, improved the situation further. He ordered a search of the island's beaches for the 43d's supplies, set up a depot on Rendova, and ordered new thirty-day medical maintenance units from Guadalcanal.[19]

Manpower was as short as leadership and supplies. The result was to hinder evacuation. Jungle warfare meant dispersion, with small units often operating alone, and in consequence, company aidmen—the first link in the medical chain—were too few. Replacements for losses in medical units were slow to arrive, and a lack of litter-bearers resulted in many casualties left lying where they fell, easy prey to enemy infiltrators, insects, leeches, and the jungle dampness. Surgeons sought to correct the situation by borrowing combat troops,

[17]Quotation from Morison, *Naval Operations in World War II*, 6:224. Statistics from Miller, *CARTWHEEL*, pp. 187–88. See also Whitehill, "Medical Activities in Middle Pacific," block 18g, pp. 1–3, file 314.7; Interv, Lt Col Hobart Mikesell, 18 Nov 43, file 000.71. Both in HUMEDS, RG 112, NARA.

[18]OofSurg, USAFISPA, ETMD (copy), 4 Nov 43, p. 2, file 350.05, HUMEDS, RG 112, NARA.

[19]Ibid., 17 Sep 43, p. 6, and 2 Oct 43 (copy), pp. 4–5, file 350.05; Whitehill, "Medical Activities in Middle Pacific," block 18g, pp. 14–20, file 314.7; Intervs, Mikesell, 18 Nov 43, and Lt Col C. P. Slaughter, 23 Dec 43, file 000.71. All in HUMEDS, RG 112, NARA.



CLEARING COMPANY, 37TH DIVISION, AT WORK

which depleted the line units. Matters were no better when the battle wounded reached the rear areas, for hospitalization was inadequate in the beginning and, despite improvements, remained so throughout the campaign. During the first month of combat, a period of heavy casualties when no hospitals at all were available, the clearing station on Rendova provided beds equal to only 1.5 percent of the entire force. (By contrast, on Guadalcanal the Americal Division had been supported by three clearing companies, all reinforced, with a total of 800 beds—about 5 percent of division strength.) Nor did the available Navy and Marine units ashore and afloat provide adequate hospital facilities; no hospital was available until the Navy's Cub Three unit arrived in late September.[20]

In late July matters improved. The 37th Division brought in its clearing company, which worked in two platoons; and the 25th Division brought one clear-

[20]Whitehill, "Medical Activities in Middle Pacific," block 18g, pp. 7–13, file 314.7; 118th Med Bn Annual Rpt, 1943, p. 2, file 319.1–2; CSurg, USAFISPA, Annual Rpt, 1943, p. 10, file 319.1–2; Rpt, Surg, XIV Corps, to Surg, USAFISPA, 31 Oct 43, pp. 2–3, 8–9, Encl to 1st End, CSurg, USAFISPA, to SG, U.S. Army, 11 Nov 43, file 370 (Medical Service, New Georgia Campaign) SPA. All in HUMEDS, RG 112, NARA. The Navy's Cub

Continued

ing platoon to New Georgia, while the other supported its 35th Infantry in the invasion of nearby Vella Lavella. In all, about 375 clearing station beds were added to 250 made available through expansion of the original clearing station on Rendova. And on the twenty-eighth the 250-bed 17th Field Hospital arrived. Yet the average bed strength of 875 during August was equal only to 3 percent of the expanded forces in the New Georgia group, still insufficient given the level of combat and the hostile environment. Casualties were slow to reach these facilities but quick to leave them. Until 15 August an evacuation policy of twenty-four hours prevailed, and after that three to five days. Only on 20 September, when the campaign was drawing to a close, did the command at last attain a seven-day policy.

For wounded troops returning to the bases, "hurry up" once more gave way to "wait." The road to treatment proved longer than the 200 miles of water to Guadalcanal might suggest. LSTs bore 87 percent of New Georgia's casualties, averaging 100–200 or more per trip, but their management was far from ideal. Problems began with scheduling. Medical units ashore had to make their own arrangements with the ships' commanders, an uncertain method at best; careful coordination was needed even to ensure that basic preparations were made—that the holds were clean and cots readied before the customary departure time of 1800. Frequently, the ships unloaded so late in the afternoon that little time was left to bring casualties aboard, make them comfortable, and exchange litters and blankets. Sailors joked that LST meant "Large Slow Target,"[21] and the voyages to Guadalcanal, lasting between twenty and twenty-four hours, lent credence to the name. For many of the wounded, taking into account delays on New Georgia and on shipboard, seventy-two or even eighty-four hours might elapse between initial injury and definitive treatment. Inevitably, wounds became infected, and gas gangrene sometimes set in.[22]

Until Munda airfield became operational on 14 August, evacuation by air was limited to those whose condition required immediate care. Navy amphibious planes carried such casualties, despite Hallam's complaint that the slow and clumsy "dumbos" required the protection of fighter planes urgently needed for combat. The whole situation was greatly eased when the airfield opened; wounded soldiers, sailors, and marines alike were dispatched in marine-piloted craft of the Air Transport Command's Pacific Wing. Until then, New Georgia too often presented the image of an area of severe combat and rampant dis-

Three unit was established in September 1942 to operate as a 200-bed base hospital or, depending on the mission, as a number of dispensaries. Hospital personnel and equipment could be divided to function as separate groups, where needed. Arriving in the South Pacific in the spring of 1943, elements of the Cub Three unit participated in the Rendova and New Georgia operations before, in its entirety, being sent to Munda, New Guinea, in September. On 16 January 1944, effective 24 December 1943, the Cub Three unit was redesignated as U.S. Naval Base Hospital No. 11.

[21]Arrangements on LSTs improved after Colonel Hallam contacted Navy officers with whom he had worked before the campaign to see that more medical supplies and a second medical officer were added to each ship.

[22]Whitehill, "Medical Activities in Middle Pacific," block 18g, pp. 2–8, file 314.7; Rpt, Surg, XIV Corps, to CSurg, USAFISPA, 31 Oct 43, pp. 5–6, Encl to 1st End, CSurg, USAFISPA, to SG, U.S. Army, 11 Nov 43, file 370 (Medical Service, New Georgia Campaign) SPA. Both in HUMEDS, RG 112, NARA.

ease, its sick and wounded unable to be treated or even to be evacuated in sufficient time to promote their recovery.[23]

The New Georgia disease picture was mixed but on the whole unsatisfactory. *Anopheles* mosquitoes were not abundant by Solomon Islands standards, and a Navy malaria control unit, landing in July, helped to prevent new cases of the disease from becoming a major problem. Practically, all malaria cases were recorded in soldiers previously infected on Guadalcanal. There the 25th Division had an admission rate of 1,313 per 1,000 troops per year; the unit actually recorded a lower rate on New Georgia during the fighting. Yet those who entered battle "thoroughly saturated with malaria" fell sick with alarming frequency, as New Georgia's 2,900 admissions for malaria testified.[24]

Other diseases were clearly of local origin. Poor field sanitation produced serious outbreaks of diarrhea and dysentery, to which line commanders, soldiers, and the medics all contributed, because of poor discipline and inadequate supervision. Waste disposal was ineptly handled, and the absence of screens on messes, kitchens, and latrines allowed the fly population to increase; a limited water supply made washing of utensils difficult, and the troops' hands were seldom clean. Medical personnel treated patients with fluids, rest, and doses of sulfaguanidine. But prevention, not cure, ensures combat readiness, and by that standard performance was poor. Admissions reached 500 per 1,000 troops per year in August; 18 percent of hospital admissions were caused by diarrhea and dysentery, a substantial drain on the command.[25]

The major medical problem encountered at New Georgia, however, was the high incidence of stress-related ailments, all lumped under the general classification of war neuroses. Included were problems that ranged from exhaustion to psychosis. The 43d Division, though it comprised only 40 percent of the forces on the island, contributed almost 80 percent of the victims. Most cases occurred during the first month of combat, when hospitalization was severely limited, a 24-hour evacuation policy was in effect, medical personnel were 30–35 percent short of authorized levels, and no psychiatrist was in the area. Some casualties were "the picture of utter exhaustion"; others were agitated, trembling and starting at every sound, "crying, wringing their hands, mumbling incoherently," and "trying to escape impending disaster."[26]

At first, these victims were simply shipped out. The 43d evacuated 1,950 of its 2,500 neuropsychiatric (NP) cases; a psychiatrist working at Fiji later remembered receiving several hundred such patients from New Georgia in a single day. Yet for many there was a simple cure. Removing NPs from the line and giving them three to four days of rest, a

[23]Whitehill, "Medical Activities in Middle Pacific," block 18g, pp. 6–7 ("dumbos," p. 6), file 314.7; Rpt, Surg, XIV Corps, to CSurg, USAFISPA, 31 Oct 43, p. 6, Encl to 1st End, CSurg, USAFISPA, to SG, U.S. Army, 11 Nov 43, file 370 (Medical Service, New Georgia Campaign) SPA. Both in HUMEDS, RG 112, NARA.

[24]ASF Monthly Progress Rpt, 30 Nov 43, sec. 7, p. 9 (quotation), THU Note Cards, Historians files; OofSurg, XIV Corps, Summary of New Georgia Campaign, pp. 1–2, file 370 (New Georgia Campaign) SPA; Whitehill, "Medical Activities in Middle Pacific," block 18e, pp. 28–29, file 314.7. All in HUMEDS, RG 112, NARA.

[25]ASF Monthly Progress Rpt, 30 Nov 43, sec. 7, p. 8–9, THU Note Cards, Historians files, HUMEDS, RG 112, NARA.

[26]Whitehill, "Medical Activities in Middle Pacific," block 18g, p. 36, file 314.7, HUMEDS, RG 112, NARA.

bath, and nourishing food enabled 75–80 percent to recover completely. Later to reach the combat zone, both the 37th and the 25th Divisions set up rest camps, salvaging, in Hallam's opinion, about 2,000 who might otherwise have been evacuated. Again, the need for forward-area psychiatrists was driven home. In response to such combat experience, and to "continued and repeated pressure from senior medical officers in the combat theaters," the War Department established the position of division psychiatrist in November 1943.[27]

Summarizing the New Georgia situation, Hallam emphasized that disease (including psychiatric disorders) warranted major consideration in operational planning. Of a force of soldiers and marines that never exceeded 35,000, a total of about 13,500 admissions had been recorded—again, as at Attu, more than the whole enemy garrison. Of these, 27 percent had been wounded, 11 percent injured, and 62 percent sick. In future operations, Hallam emphasized, the forces would need mobile surgical units; forward surgical teams; medical, surgical, and psychiatric consultants; convalescent camps to conserve manpower; and more adequate hospitals, with laboratory personnel to speed diagnosis of the many tropical ills.[28]

If the medical side of the campaign for New Georgia was run worse than the campaign for Guadalcanal, the struggle itself was in some respects more wearing. The soldiers and marines on New Georgia were unable to fight a largely defensive battle, as the marines had on Guadalcanal, where the fighting was aggressive throughout. In the earlier campaign Henderson Field had fallen to the Americans almost at once, virtually undefended; on New Georgia, Munda airfield yielded only after a bitter and protracted struggle. Of courage there was much evidence on New Georgia, among the medics as well as the line. The medics of the 118th Medical Battalion alone received three Silver Stars, a Legion of Merit, twenty-one Purple Hearts, and a variety of other decorations; one medic, Pfc. Frank J. Petrarca, was awarded the Medal of Honor. Yet in the last analysis the battle was won by the sheer weight of numbers, and the medical support system did not work very well at all.[29]

The situation cried out for planning that would not again send one division to do the work of three, or a clearing station to perform the duties of a field hospital. To the theater's credit, learning was swift. It was New Georgia, not Guadalcanal, that compelled USAFISPA headquarters to face up to the medical realities of jungle warfare, and the theater's last major fight, at Bougainville, was conducted in a far more competent style.

[27]Quotation from Lloyd J. Thompson, "Early Developments, Personnel, and Education and Training," in Albert J. Glass, ed., *Overseas Theaters*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1973) p. 196n9. On the division psychiatrist position, see WD Cir 290, 9 Nov 43, p. 2. See also Intervs, Slaughter, 23 Dec 43, and Maj Theodore Lidz, 26 Mar 45, file 000.71; Ltr, M. Ralph Kaufman to Col Earl Maxwell, 16 Dec 43, sub: Neuropsychiatric Experiences With the 17th Infantry Division, in OofSurg, USAFISPA, ETMD, 6 Jan 44, file 350.05; and Personal Opinion of Maj Harold J. Barker, MC, as to the New Georgia Campaign, 6 Sep 43, THU Note Cards, Historians files. All in HUMEDS, RG 112, NARA.

[28]OofSurg, XIV Corps, Summary of New Georgia Campaign, pp. 1–2, file 370 (New Georgia Campaign) SPA, HUMEDS, RG 112, NARA.

[29]118th Med Bn Annual Rpt, 1943, an. 3, p. 2, file 319.1–2, HUMEDS, RG 112, NARA.

Bougainville

While MacArthur's forces battled on the Huon Peninsula and the soldiers and marines on New Georgia bogged down, Colonel Maxwell prepared to support Halsey's assault against Bougainville, on the northernmost and largest island of the Solomon chain. Bougainville is 125 miles long and 30 to 48 miles wide, with a mountainous spine formed by two ranges with active volcanoes, the largest of which rises to 10,000 feet. The slopes are covered with rainforest even denser than on Guadalcanal. On the southern coast an undulating plain 15–20 miles wide fans out from the base of one range, with cocoanut plantations, most of the native population, two enemy airfields, and, in 1943, the only roads on the island that were passable to vehicles. Here the Japanese concentrated their forces, expecting attack.

To traverse the rest of the island, natives used a network of jungle trails and, along the coast, dugout canoes. A thinly inhabited area fronted Empress Augusta Bay on the west coast, where swamps and brackish lagoons formed by many small rivers provided nurseries for disease-bearing insects. On this inhospitable but weakly garrisoned shore the Americans proposed to land, establish a beachhead, and seize or build airfields to mount strikes against Rabaul.[30]

The attack was a joint operation, involving both Army and Marine units. General Vandegrift, reassigned as commander of the I Marine Amphibious Corps and a hero of Guadalcanal, led the landing forces. Detailed planning of naval operations was the responsibility of Rear Admiral Theodore S. Wilkinson, commander of the III Amphibious Force. Maxwell coordinated planning with the Navy, aiming above all to avoid the medical mistakes that had darkened previous campaigns in the islands.

He augmented divisional support, attaching to the collecting companies surgical teams, each of which consisted of two surgeons, an anesthetist, and two enlisted technicians. Clearing companies were reinforced with both personnel and equipment so that they could function, in effect, as division hospitals. (Portable surgical hospitals were on order, but had not yet arrived in the theater.) With the 37th Division's 112th Medical Battalion went surgical, medical, orthopedic, and psychiatric consultants; laboratory teams; malaria control and survey units; and a casual company to operate a rest camp.[31] Maxwell also planned to land hospitals soon after the assault; however, shipping shortages at the time prevented the move. As soon as conditions permitted, he sent from Guadalcanal the 380-bed 52d Field Hospital, mainly to care for the service troops, and the 750-bed 21st Evacuation Hospital—a highly skilled affiliated unit staffed by the University of Oklahoma—to care for the combat troops (*see Map 8*).[32]

[30]Whitehill, "Medical Activities in Middle Pacific," block 18g, pp. 57–58, file 314.7, HUMEDS, RG 112, NARA.

[31]A casual company was part of a clearing company, but it actually functioned as a separate unit, successfully operating a convalescent camp that provided casualties with food, quiet surroundings, and light activity before their return to frontline duty. See ibid., p. 75, file 314.7, HUMEDS, RG 112, NARA.

[32]Ibid., p. 66, and block 8, p. 122, file 314.7, HUMEDS, RG 112, NARA; Benjamin M. Baker, "South Pacific Area," in W. Paul Havens, Jr., ed., *Activities of Medical Consultants*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1961), pp. 589–90.

In similar fashion, the Navy bolstered medical support. To the I Marine Amphibious Corps were assigned three reinforced medical companies, each capable of functioning as a 400-bed hospital. Until facilities were ready on shore, casualties were to be treated on several LSTs and the attack transport USS *American Legion*, all staffed and equipped to perform surgery.[33]

After preliminary seizure of the nearby Treasury Islands and a feint against Choiseul, the 3d Marine Division landed on the jungled shore of Empress Augusta Bay on 1 November, a brilliant tropical morning. The few defenders were killed or driven inland, and the marines quickly established a perimeter. By the end of the first week work had begun on an airfield at Cape Torokina. The 37th Division landed to help defend the perimeter, and on 9 November Maj. Gen. Roy S. Geiger, USMC, replaced Vandegrift. In some respects, a replay of the defensive struggle on Guadalcanal ensued. The Americans prepared for counterattacks on the ground, while sharp battles in the air and on the sea effectively destroyed the significance of Rabaul except as a defensive bastion.

Meanwhile, the beachhead grew in the face of piecemeal counterattacks from Japanese forces that were still awaiting a nonexistent American assault on the southern coast. On 15 December General Griswold's XIV Corps took over what was now a heavily fortified 12-mile-long perimeter. The swamps were drained, roads extended, and gardens dug to provide fresh vegetables for the troops; the airstrip was completed, enabling Marine fighters to support Army bombers in intensive and destructive raids against Rabaul. At last, in January and February 1944 the Japanese moved by foot along jungle trails and by barge around the coast to launch a belated counterattack. Heavy fighting along the perimeter reached a climax during March, as Griswold's well-organized defense, aided by naval gunfire and air support, defeated three strong enemy assaults. After a few engagements in April the Japanese, long cut off from reinforcements and supplies by American command of the sea and air, withdrew from the perimeter, never again to play a significant part in the war.

Medical Support

When the 37th Infantry Division landed on Bougainville, the Navy hospitals of the 3d Marine Division, already well established, cared for Army casualties until the collecting and clearing stations of the 112th Medical Battalion were ready. Thereafter, hospitalization was more than adequate. Indeed, the low casualty rate early in the campaign made the surgical teams attached to the collecting companies unnecessary and, after serving briefly, they returned to New Caledonia. In mid-December the 52d Field Hospital became the principal facility for the care of serious cases, until the 21st Evacuation Hospital opened in February 1944. Working only 4,000 yards from the front line, the 21st received most of those seriously wounded in the March attack, often directly from the aid stations. Ample bed strength well forward made possible a thirty-day evacuation policy as soon as the assault stage was over. Casualties judged to be fit for duty within that time

[33] "Navy Medical Department at War," 1:123–24, BMSA.

were not lost to their units through evacuation; only forty-eight were removed from the island during the first six weeks. The campaign's record in this respect set it apart from all previous Allied efforts in the Pacific fighting.[34]

Yet the jungle and the enemy combined to impose serious difficulties on the medics and their charges. Until mid-December the marines evacuated from battalion aid stations to field hospitals by amphibious tractors through the swamps. Then construction crews completed a road system within the perimeter that allowed motor ambulances to provide rapid and efficient service even during the March attacks. Most casualties arrived at a hospital within three hours of wounding, and many within one hour. But evacuation for those who ventured outside the perimeter remained difficult and dangerous. Patrols moved as far as 8,000 yards into enemy-held territory. Casualties had to be littered back over ridges and draws, exhausting bearers and patients alike. Some who were wounded on patrol did not reach a hospital until twenty-four to forty-eight hours had elapsed, receiving only the care that a single aidman could provide during that window of time.[35]

Before airfields opened, ships and PBY "Catalina" amphibious planes evacuated casualties from Bougainville. Both proved unsatisfactory. For casualties to reach an amphibious plane entailed transfers by litter or jeep to the beach, and from there by tank lighter to a small crash boat. The crash boat then maneuvered to the plane's side gunport, through which the stretcher was manhandled aboard. Evacuation by LST required movement by litter or jeep to the beach, and then by tank lighter to the ship. Most Army casualties, however, came late enough in the campaign to be evacuated by land-based aircraft, as airfield construction on Bougainville enabled Marine C–47s to carry casualties back to Guadalcanal on return runs. Those needing a long period of convalescence went further, by ship or air to Espiritu Santo or New Caledonia.

The primary innovation that distinguished Bougainville was that the Navy assumed sole responsibility for planning and coordinating all evacuation from the beachhead. Centralized control resulted in minimal confusion and delay and, in combination with adequate bed strength on shore, assured that those to be evacuated were truly in need of care that went beyond the capacities of the island.[36]

Strict attention to the mistakes made on New Georgia also enabled the Office of the Chief Surgeon, USAFISPA, to deal more effectively with disease. Except for combat fatigue and malaria brought in by the troops, problems were few. Of 40,500 who served on

[34]Whitehill, "Medical Activities in Middle Pacific," block 18g, pp. 58–77, file 314.7; Surg, XIV Corps, Annual Rpt, 1943, pp. 1–2, file 319.1–2. Both in HUMEDS, RG 112, NARA. See also "Navy Medical Department at War," 1:123–24, 135, BMSA; Sir Duncan Stout, "The New Zealand Medical Services," in Sir Arthur Salusbury MacNalty and W. Franklin Mellor, eds., *Medical Services in War: The Principal Medical Lessons of the Second World War* (London: Her Majesty's Stationery Office, 1968), pp. 701–11.

[35]Whitehill, "Medical Services in Middle Pacific," block 18g, pp. 64–65, file 314.7; Rpt (Extract), Col J. M. Roamer, Intel Dir, ASF, 12 Jul 44, sub: Lessons From the Experiences of the 3d Marine Division in the Bougainville Operations, p. 25, file 350.07 (Bougainville Operations, 3d Marine Div) SPA. Both in HUMEDS, RG 112, NARA.

[36]Whitehill, "Medical Activities in Middle Pacific," block 18g, pp. 66–67, file 314.7, HUMEDS, RG 112, NARA; "Navy Medical Department at War," 1:132–37, BMSA.



UNLOADING CASUALTIES AT A COLLECTING STATION

Bougainville, only about 5,000 suffered ailments other than enemy-inflicted wounds, a remarkably low proportion on an island afflicted with many infectious diseases. Perhaps because of its larger population, Bougainville (unlike New Georgia) recorded malaria, dengue, scrub typhus, filariasis, pneumonia, influenza, and intestinal parasites among its endemic ills. Skin diseases were common among the natives, as were eye infections and diphtheria.[37]

In such an environment the American forces suffered much discomfort and scattered cases of severe illness: scrub typhus, contracted by troops on patrol; amebic dysentery; diphtheria; and hookworm infection. Malaria was fairly common, and yet, despite the island's dense *Anopheles* population, almost all cases resulted from earlier infections. Credit for preventing more infections belonged to the efforts of the joint malaria and insect control organization (similar to SWPA's joint tropical disease control committee) under Comdr. James J. Sapero, MC, USN. Pre-invasion indoctrination of the troops, stressing individual malaria discipline, was supplemented on Bougainville with a well-planned and well-executed program of ditching, draining, dusting, and oiling that was begun immediately after the first landing

[37]Whitehill, "Medical Activities in Middle Pacific," block 18g, pp. 58, 69–77, file 314.7, HUMEDS, RG 112, NARA; "Navy Medical Department at War," 1:130–31, BMSA.



LOADING CASUALTIES ON A TANK LIGHTER

and carried out by malaria survey and control detachments, which had gradually increased in number during 1943.

Other health problems were less threatening. The wet, steaming jungle and the limited opportunities to bathe resulted in the usual skin conditions, which were painful and distressing but seldom required hospitalization. The casual company's rest camp, by treating skin diseases along with ear, eye, and sinus infections, enabled many soldiers to stay on the island who might otherwise have been evacuated; an expert dermatologist, had one been assigned, might have saved more. The majority of casualties, however, were victims of exhaustion or combat fatigue; for them the camp provided a quiet respite before they returned to duty. In contrast to the heavy evacuations from New Georgia, over 90 percent of the 37th Division's battle fatigue cases returned to duty. Division psychiatrists, appearing for the first time during this campaign, provided expert diagnoses to the 37th and the Americal Divisions, which already had good records in avoiding excessive numbers of NPs. Veterans of earlier campaigns, with good morale and capable leadership, the soldiers of the two divisions were matured campaigners, like the medical service that supported them, and the results were

nowhere more apparent than in their NP and evacuation records.[38]

Overall, the success of the two armed services in cooperative support for the campaign was outstanding. For the Japanese, the consequences of defeat were grimly predictable. About 10,000 of their soldiers, deprived of supplies and weakened by hunger, died from beriberi, dysentery, and malaria. As a direct result, the Allies' slight numerical advantage in November grew to a marked superiority by March 1944. The fact that the Army's mission on Bougainville was largely defensive played a substantial role in limiting losses and making the medics' task easier. Yet, without good preventive medicine, fighting on the defensive could have presented grave health risks of its own to troops occupying a crowded perimeter in so hostile an environment. Henceforth, professionalism and competence were the rule rather than the exception, a fact confirmed in the last CARTWHEEL operation—the occupation of the Green Islands, a little more than 100 miles from Rabaul, against light enemy opposition.[39]

New Britain

Meanwhile, important decisions had emerged about the future of CARTWHEEL as a whole. At the crucial Casablanca Conference in early 1943 the Allies had approved an advance in the central Pacific. In the spring the Joint Chiefs resolved upon a double advance, of which CARTWHEEL was the southern arm. Though compelling the Japanese to face two threats had obvious advantages, the decision meant that the forces MacArthur and Halsey had counted upon to aid their advance, notably the 2d Marine Division, would be diverted north. General Marshall now perceived the benefits of bypassing rather than capturing Rabaul; General MacArthur, after initial resistance, tacitly accepted the idea as well—and in time became a noted exponent of bypassing Japanese bases once they had been isolated and neutralized by the destruction of their air power.

When MacArthur's forces moved again in the autumn of 1943, they sought first to control the northern side of the straits between New Guinea and New Britain (the capture of Finschhafen and the Huon Peninsula had given them the southern side) by seizing part of western New Britain, at whose opposite tip lay Rabaul. Cape Gloucester and the natural harbor of Arawe were chosen as objectives. Arawe was the lesser of

[38]Whitehill, "Medical Activities in Middle Pacific," block 18g, pp. 58, 69–77, file 314.7; Rpt (Extract), Roamer, 12 Jul 44, pp. 24, 26, file 350.07 (Bougainville Operations, 3d Marine Div) SPA; Ltr, Kaufman to Maxwell, 16 Dec 43, in OofSurg, USAFISPA, ETMD, 6 Jan 44, file 350.05. All in HUMEDS, RG 112, NARA. See also "Navy Medical Department at War," 1:127–32, BMSA, and Blanche B. Armfield, *Organization and Administration in World War II,* Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963), p. 393. Marine combat fatigue cases, which outnumbered casualties from all other diseases, were kept near the front as well.

[39]The Green Island campaign was carried out by New Zealand troops, supported by U.S. Army artillery and by New Zealand and American medical personnel. See John N. Rentz, *Bougainville and the Northern Solomons* (Washington, D.C.: Historical Section, Division of Public Information, Headquarters, U.S. Marine Corps, 1948), pp. 114–19; T. Duncan M. Stout, *Medical Services in New Zealand and the Pacific in Royal New Zealand Navy, Royal New Zealand Air Force and With Prisoners of War,* Official History of New Zealand in the Second World War, 1939–45 (Wellington: War History Branch, Department of Internal Affairs, 1958), pp. 56–63. See also Notes on Surg, Med Det, 967th AAA Gun Bn, Quarterly Rpt, Apr–Jun 44, pp. 3–4, and 157th Sta Hosp Quarterly Rpt, Jul–Sep 44, pp. 2–3, Historians files, HUMEDS, RG 112, NARA.



29TH EVACUATION HOSPITAL FOLLOWING THE AIR ATTACK

the two, defended by only a few hundred of the more than 80,000 Japanese on New Britain.[40]

The Army task force was built around the veteran 112th Cavalry. Supporting medical units included a clearing company and a collecting platoon of the 135th Medical Regiment, the 29th Evacuation Hospital, and three portable surgical hospitals. On 15 December the main landing, led by amphibious tractors, took place against light opposition. Two enemy companies quickly retreated, but planes from Rabaul attacked the invaders. Army landing craft, dodging bomb bursts and strafing, rescued the survivors of sinking boats.

Hospitals provided close support. A surgical team of the 29th Evacuation Hospital landed with the assault troops and worked on the beach, beside the aid station (*see Map 8*). For the first time, portables operated aboard LCTs (landing craft, tank), assisted by mobile surgical teams of two surgeons and ten corpsmen each. The LCTs frequently came under enemy air attack, both when they stood inshore to evacuate casualties from the beach and when they ferried the wounded across the embattled straits. The 29th established itself on the boot-shaped peninsula that enclosed the harbor. The swampy ground and the destruction of cover by American bombardment and Japanese air attacks

[40]Arawe was never used either for an airstrip or a PT boat harbor, the original justifications for taking it. The 118 dead and 352 wounded apparently suffered to no purpose.

forced hospital personnel to work in dugouts, protected by cocoanut logs and sandbags. Despite this protection, on 16 December a direct hit blasted the operating room and killed two enlisted men, indicating that too large a unit had come ashore too soon in too vulnerable an area.[41]

Meanwhile, the 1st Marine Division invaded Cape Gloucester on 26 December. The marines secured the beach with ease, their main obstacle proving to be the swampy jungle that lay inland. But the campaign thereafter was a slow, tough advance that involved hacking out jungle trails, maneuvering through swamps, and fighting a tenacious enemy on rain-drenched jungle ridges and in stifling fields of shoulder-high kunai grass. Ashore, a Navy beach party officer, for the first time in the Southwest Pacific Area, worked with the 1st Marine Division to organize the evacuation of casualties. Medical units staffed by the Navy bore the burden of support throughout the fighting; except for one collecting company of the 135th Medical Regiment, Army medical units did not arrive to relieve them until 30 January 1944. In the opinion of Army observers, forward care left much to be desired. Col. William B. Parsons, MC, surgical consultant to General Headquarters, SWPA, observed some of the evacuees and reported: "A large percentage . . . were dehydrated, toxic, running a temperature, and exhausted. The wounds were in bad shape, and a large number, about 60 percent, had to be operated [on] immediately upon arrival [in a hospital]. Several cases of gas infection amputations were involved."[42]

LSTs specially converted for hospital care were used for both surgery and evacuation. The LST–H crewmen made the necessary physical alterations, installing a watertight hatch in the tank deck bulkhead to provide ready entry into the forward troop compartments, which were then converted into a receiving room, a scrub room for the surgeons, and an operating room. Ambulances entered the ship just as tanks had left it, by driving up the ramp. Ward space was provided by cots on the tank deck and by bunks in the troop compartments of the ship. Even when converted, the LST–H remained far from a safe or comfortable means of treating the wounded. But the Southwest Pacific Area had few ships and came to rely upon the LST–H more than any other theater, for the ship served medical needs without losing its capacity for carrying troops and cargo. The 6th, 8th, and 13th Portable Surgical Hospitals all worked aboard such ships, stabilizing the wounded while moving through the still-dangerous waters of the Dampier Strait toward Army hospitals at Finschhafen, Goodenough Island, Buna, and Milne Bay.[43]

[41]"Seventh Amphibious Force History," pp. 65–66, file 314.7 (7th Amphibious Force) SWPA; Interv, Sgt Charles T. Downer, 23 Jan 45, file 000.71; 29th Port Surg Hosp Annual Rpt, 1943, p. 2, file 319.1–2; Quarterly Rpts, Oct–Dec 43, for 17th Port Surg Hosp, pp. 1–2, 135th Med Regt (copy), p. 3, and 29th Evac Hosp (copy), p. 2, file 319.1. All in HUMEDS, RG 112, NARA.

[42]Interv, Col William B. Parsons, 19 Aug 44, p. 5 (quotation), file 000.71; 135th Med Regt Unit History (copy), [1942–44], p. 3, file 300-Med-0.1. Both in HUMEDS, RG 112, NARA.

[43]"Seventh Amphibious Force History," p. 66, file 314.7 (7th Amphibious Force) SWPA; 6th Port Surg Hosp Quarterly Rpts, Oct–Dec 43 and Jan–Mar 44, and 8th Port Surg Hosp Quarterly Rpt, Jan–Mar 44, THU Note Cards, Historians files; Notes on 13th Port Surg Hosp Quarterly Rpt, Jan–Mar 44, Historians files. All in HUMEDS, RG 112, NARA.

After the battle, Army medical units ashore still found much work to do, for the enclave was scourged by disease. The 135th Medical Regiment furnished ambulance service, accompanied marine patrols, ran a holding unit for air evacuees, and relieved a Navy clearing station that was performing poorly its job of supporting the marines. Then the 30th Evacuation Hospital arrived to support the varied forces in the area—the marines, Army service troops, and air force units. A site for the hospital's semipermanent buildings had to be hand-hacked out of the jungle's high hardwood trees and matted undergrowth, mostly by native laborers. Twelve of the twenty wards held marines suffering from scrub typhus, Cape Gloucester's most dangerous endemic disease acquired in the kunai grass inhabited by rats harboring infected mites. The disease featured high fever and prostration, and in this area resulted in a mortality of 8.3 percent.[44]

Treatment required a long period of hospitalization, with careful nursing. When 155 casualties were admitted during February and March, the 30th Evacuation Hospital requested assistance from the companies of the 135th Medical Regiment. Control measures included clearing undergrowth from unit areas, burning off kunai grass, and eradicating rodents. Orders were issued to the troops to tie their pant legs and cover their bodies as much as possible—no easy prescription to follow, given the climate.[45]

An overture to the coming campaign along the New Guinea coast, and to some degree a distraction from it, the New Britain battles were marked by useful innovations in amphibious medical support. While the Japanese prepared for an attack against Rabaul that never came, MacArthur now gathered his forces—battle-tested and strengthened by improved intelligence, amphibious capability, and air support—to strike deep behind enemy lines.

CARTWHEEL Ends

Lying on the north side of the Huon Peninsula, 110 miles from Finschhafen, the target town of Saidor was a useful site on which to construct a forward airstrip. Expecting sharp counteraction to an assault that would divide the Japanese *18th Army*, the SWPA medical service provided twice as much support as for Salamaua, an operation of similar size. A task force built around the 126th Regimental Combat Team of the battle-tested 32d Infantry Division—about 7,000 soldiers in all—received support from an amphibious medical company, a collecting company, a clearing pla-

[44]135th Med Regt Unit History (copy), [1942–44], pp. 3–6, file 300-Med-0.1; Quarterly Rpts (copies), Jan–Mar 44, for 30th Evac Hosp, pp. 1–2, and Surg, Sixth Army, pp. 3–4, file 319.1. All in HUMEDS, RG 112, NARA. The Cape Gloucester mortality was about standard for New Guinea, though some areas reported much worse; on Goodenough Island, 25 percent of those who became ill died.

[45]135th Med Regt Unit History (copy), [1942–44], pp. 3–6, file 300-Med-0.1; Quarterly Rpts (copies), Jan–Mar 44, for 30th Evac Hosp, pp. 2–3, and Surg, Sixth Army, pp. 10–11, file 319.1. All in HUMEDS, RG 112, NARA. See also Francis G. Blake et al., "Studies on Tsutsugamushi Disease (Scrub Typhus, Mite-Borne Typhus) in New Guinea and Adjacent Islands: Epidemiology, Clinical Observations, and Etiology in the Dobodura Area," *American Journal of Hygiene* 41 (May 45): 243–373; Cornelius B. Philip, "Scrub Typhus and Scrub Itch," in Ebbe Curtis Hoff, ed., *Communicable Diseases: Arthropodborne Diseases Other Than Malaria*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1964), pp. 275–91, 340–44.

toon, six portable surgical hospitals, a field hospital, a malaria survey unit, and a medical supply aviation platoon. Other medical units were to arrive after the initial landing. Again, four of the portables functioned in effect as small evacuation hospitals aboard converted LSTs.

The troops went ashore on 2 January 1944, as scheduled, but the array of medical units proved to be unnecessary. Resistance to the landing amounted to no more than a few rifle shots; the enemy failed to counterattack, and the Allies missed an opportunity to trap two withdrawing Japanese divisions between the American invaders and the Australians advancing overland. Casualties remained few, although some cases of scrub typhus appeared when troops bivouacked in kunai grass and neglected to apply a miticide recently recommended by Army typhus experts to their clothing and blankets. While the Allies consolidated their gains and planned new advances, the Japanese escaping through the jungle suffered new and heavy losses to hunger and disease.[46]

The concluding act of CARTWHEEL was an invasion of the Admiralty Islands. Lying north of Saidor, the group consists of a principal island, Manus; a smaller island, Los Negros; and a number of islets paralleling Manus' northern coast. Possessing a superb harbor and two airfields, the Admiralties promised to make an excellent forward air base to control the Bismarck Archipelago, as well as a future staging area for later moves against the Philippines.

Brig. Gen. Guy B. Denit, MC, who replaced Carroll as chief surgeon in January, had to provide medical units for a large task force built around, not a regimental combat team or two, but the veteran dismounted 1st Cavalry Division. Support included the division's 1st Medical Squadron, a separate clearing company, one evacuation and two portable surgical hospitals, and malaria control and survey units. The division's unusual structure—four regiments organized into two brigades—caused a portable to be assigned to each brigade, to land and move forward with the troops. Native litter-bearers were to be employed, to overcome the obstacles of terrain that was known to be difficult.[47]

Such preparations were timely, for the infantrymen found hard fighting in the Admiralties. For a month after landing on 28 February, the division fought a slow, arduous battle for Los Negros, enduring heavy casualties. Japanese counterattacks sent many to the rear with grenade and mortar wounds. The 30th Portable Surgical Hospital went in early, with the reconnaissance force, and settled into Japanese dugouts near an aid station 150 yards inland. Surgeons operated in one bunker, and used two others as wards; the flow of plasma rarely stopped, and surgery went on all

[46]See Quarterly Rpts (copies), Jan–Mar 44, for 22d Port Surg Hosp, pp. 1–2; Surg, Sixth Army, pp. 4, 10–11; Surg, 32d Inf Div, pp. 1–3, 7; 23d Field Hosp, pp. 1–3, 5; 670th Clearing Co, p. 1; and FSurg, Adv Echelon, 5th Air Force, p. 1, all file 319.1, as well as for 6th Port Surg Hosp, THU Note Cards, Historians files, and Notes on 13th Port Surg Hosp, p. 1, Historians files. All in HUMEDS, RG 112, NARA. In loc. cit., see also Interv, Downer, 23 Jan 45, file 000.71; 135th Med Regt Unit History (copy), [1942–44], p. 4, file 300-Med-0.1; and "Seventh Amphibious Force History," p. 67, file 314.7 (7th Amphibious Force) SWPA.

[47]Surg, lst Cav Div, Quarterly Rpt (copy), Jan–Mar 44, p. 2; Surg, Sixth Army, Quarterly Rpt (copy), Jan–Mar 44, pp. 4–6. Both file 319.1, HUMEDS, RG 112, NARA.

night under blackout conditions. Casualties from the other islands were moved to Los Negros by landing craft, and from there evacuated to Oro Bay or Finschhafen in Navy destroyers, LSTs, C–47s, B–17s, and B–25s.[48]

On the line, corpsmen crawled under the guard of tommygunners to retrieve the wounded. Litter-bearers stood in the surf to wash blood from litters with cold brine. The 58th Evacuation Hospital arrived on 6 March and the 27th Portable Surgical Hospital three days later (*see Map 8*). The division clearing station handled 1,013 surgical and 195 medical cases that month. On the ninth Los Negros was firmly in American hands, but further sharp fighting on Manus followed.[49]

In all respects but one, the infantrymen who were not wounded by enemy fire stayed a relatively healthy lot. Preventive medicine began while the fighting still raged. Navy malaria teams and Army anti-malaria units enrolled native laborers and embarked on a control program that included inspecting units to maintain individual malaria discipline and oiling, draining, and filling mosquito breeding areas. Meanwhile, a malaria survey unit drew blood from both Americans and natives to determine the existing scope of infection. By the end of March the unit was able to report that, although malaria and dengue were highly endemic, the transmission rate among American forces was being kept low by the mixture of individual and area control measures. Similarly, anti-fly precautions kept down diarrheal diseases. The small number of NPs indicated abler leadership and more experienced and better disciplined troops. But the familiar plague of skin diseases appeared again, making life as miserable as ever.[50]



BRIG. GEN. GUY B. DENIT, MC

The Admiralties in Allied hands became an important new base for future operations, but their conquest exacted a heavy price. Even after Seeadler Harbor and the airfields were secure, enemy resistance continued; not until 18 May 1944 did Lt. Gen. Walter

[48]Surg, 1st Cav Div, Quarterly Rpt (copy), Jan–Mar 44, pp. 2–3, file 319.1, HUMEDS, RG 112, NARA; De Witt Mackenzie, *Men Without Guns* (Philadelphia: Blakiston Co., 1945), p. 15.

[49]Surg, 1st Cav Div, Quarterly Rpt (copy), Jan–Mar 44, pp. 2–3, file 319.1, HUMEDS, RG 112, NARA; Mackenzie, *Men Without Guns*, p. 15.

[50]28th Malaria Survey Unit Quarterly Rpt (copy), Jan–Mar 44, pp. 1–2; Surg, 1st Cav Div, Quarterly Rpt (copy), Jan–Mar 44, p. 1. Both file 319.1, HUMEDS, RG 112, NARA.

Krueger, commanding general of the Sixth Army, declare the operation ended. In all, the 1st Cavalry Division lost 326 killed, 1,189 wounded, and 4 missing; the Japanese apparently lost about 4,000 killed and 75 captured.[51]

The Road to Hollandia

With Rabaul neutralized, the conquest of Japanese-held western New Guinea moved into high gear. Able to follow enemy troop dispositions through breakthroughs in signal intelligence, General MacArthur planned a surprise assault on Hollandia and Aitape, coastal towns in the Netherlands New Guinea. The region near Hollandia boasted harbors, three working airfields, and a fourth partly completed—a Japanese base second only to Rabaul in strength. Yet, because the enemy did not expect to be attacked so far from Allied bases and airfields (Hollandia lies nearly 600 miles west of Finschhafen), the 16,000 defenders were known to be mostly airmen and service troops.[52]

For the attack MacArthur chose the 24th and 41st Infantry Divisions, organized as the RECKLESS Task Force, a temporary headquarters for I Corps and its commander, General Eichelberger. Carrying the troops was Admiral Barbey's VII Amphibious Force of transports, escorts, and landing craft. This flotilla was part of the Navy's Task Force 77, which also included an armada of battleships, cruisers, destroyers, plus escort carriers sent by Admiral Nimitz to provide air cover. In this amphibious operation, the largest ever in the Southwest Pacific Area, converted LST–Hs would be employed, with the medical officer aboard each control vessel regulating the movement of casualties to the ships and of medical supplies and equipment to the shore. Some LSTs were to be beached to provide immediate surgical care to the wounded, after which a naval medical officer was to route them to the appropriate ship.

Landings were planned at two inlets: Humboldt Bay, on which Hollandia lies; and Tanahmerah Bay, lying westward beyond the towering Cyclops Mountains. The major objective was Lake Sentani, which had three airfields on its north shore. But the way there was long—18 miles from Humboldt and 14 from Tanahmerah Bay—and threatened to be difficult and costly. To support its thrust at Tanahmerah Bay, the 24th Division had available its 24th Medical Battalion, two portable surgical hospitals, a separate clearing company, and an amphibious medical company; held in reserve were a collecting company from its medical battalion, medical units supporting its 34th Regimental Combat Team, the division reserve, and the 36th Evacuation Hospital. Medical support was similarly abundant for the 41st Division's projected landing in Humboldt Bay.

At dawn on 22 April 1944, under a naval smoke screen and a rocket barrage, the RECKLESS Task Force came ashore from a calm sea without opposition. The barrage had sent the Japanese service troops flying into the hills, leaving behind their half-eaten breakfast of warm

[51]Miller, *CARTWHEEL*, pp. 348–49.

[52]Unless otherwise noted, combat narrative for remainder of this chapter drawn from Robert Ross Smith, *The Approach to the Philippines*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1953). On Hollandia, see Heavey, *Down Ramp!*, pp. 114–17, and "Navy Medical Department at War," 1:192, 196, BMSA. On the VII Amphibious Force, see Edwin P. Hoyt, *MacArthur's Navy: The Seventh Fleet and the Battle for the Philippines* (New York: Orion Books, 1989).

rice and tea. Beachheads were established; success came so quickly that, at 1500, Generals MacArthur and Krueger waded ashore in Tanahmerah Bay.

Understandably, medical support at first went smoothly. At Humboldt Bay the 116th Medical Battalion followed the 41st Division inland along rough mountain trails. At Tanahmerah, however, problems developed. The two assault regimental combat teams, built around the 24th Division's 19th and 21st Infantry, landed on separate beaches unconnected by any road. On Red Beach 2 the troops were bottled up not by the enemy but by an inland swamp, which neither they nor their vehicles could penetrate. At Red Beach 1 soldiers made their way up the Depapre–Lake Sentani trail, but even jeeps could not negotiate the winding mountainous way. Offshore, coral reefs prevented LSTs from approaching closely, and days passed before supply depots could be established ashore.[53]

Meanwhile, a disaster occurred behind the lines. In Humboldt Bay one beach had been a major Japanese supply dump, with piles of ordnance, rations, airplane engines, and medical supplies. The Americans similarly piled their own materiel beside the dump. But on the night of D+1 a lone enemy bomber scored three direct hits on the captured dump, setting off thunderous blasts and sending burning missiles hundreds of feet into the air. Sailors in ships offshore could see the glow from miles away, as fires spread along the beach, burning for two days and destroying 60 percent of the supplies, American and Japanese.

The calamity killed twenty-four Americans and injured sixty-four, and delayed the landing of the 92d Evacuation Hospital and the portable surgical hospitals. But the collecting platoon of Company B, 262d Medical Battalion, had established an aid station in the center of the area. Throughout the night of 23–24 April the two officers and forty-four enlisted men held their post, working amid the holocaust of flame and flying shrapnel to pull the burned and injured from the wreckage and give first aid. Their courage won a presidential unit citation.[54]

Away from the devastation on the beach, 41st Division forces encountered minimal enemy resistance but rugged terrain and heavy downpours. Meanwhile, troops on the Tanahmerah Bay–Depapre trail coped with countless defiles, swollen streams, and frequent landslides. On the march, collecting companies provided medical support, first aid, and even basic surgery. Supplies had to be hand-carried forward and casualties littered back to the beaches. By D+3 the supply and evacuation line to Tanahmerah Bay was 12 miles long, rainsoaked, and so difficult that it took one to two days to walk. All the collecting companies and portables at Tanahmerah were sent forward to assist. Relay points were established, where casualties received treatment and litter-bearers rested. Clearing stations and an

[53]Rpt, Surg, 116th Med Bn, sub: Letterpress LF [Landing Force], 17 Apr–5 May 44, p. 2, file 341-Med-0.3, box 10649, and Tanahmerah Historical Rpt, 22 Apr–6 Jun 44, an. 14, p. 216, file 324.0–3, box 7667, RG 407, NARA. See also Surg, 24th Inf Div, Quarterly Rpt (copy), Apr–Jun 44, p. 2, file 319.1, HUMEDS, RG 112, NARA.

[54]Rpt, Surg, 116th Med Bn, pp. 2–3, file 341-Med-0.3, box 10649, RG 407, NARA; Surg, 24th Inf Div, Quarterly Rpt (copy), Apr–Jun 44, pp. 2–3, file 319.1, HUMEDS, RG 112, NARA. Unit citation reprinted in Heavey, *Down Ramp!*, p. 208.



EVACUATION BY AIR

advance surgical team of the 36th Evacuation Hospital cared for casualties on the Red beaches before moving them by boat to the 92d Evacuation Hospital, now established at Humboldt Bay. There Japanese medical supplies that had escaped the fire—surgical instruments, soap, dressings, peroxide, microscopes, an X-ray machine, and ten tons of quinine—were put to good use by the hospitals.

On 26 April the weary 24th Division made contact with the 41st Division at Lake Sentani, a beautiful and refreshing scene below grassy hills with "stranded trees scattered in lonely fashion." The Allies now possessed three airfields—Hollandia, Sentani, and Cyclops. The fourth at Tami, 6 miles west of Humboldt Bay, fell shortly afterward. The Depapre Trail was abandoned, and casualties were taken to Humboldt Bay instead. But as the airfields were put to use by Allied planes, evacuation by air rapidly took precedence and soon was moving twice as many evacuees as the longer, slower route by sea. During the weeks that followed, combat patrols hunted down the remaining enemy; service troops took over the region, and General Krueger officially declared the operation closed. American casualties numbered only 124 killed, 1,057 wounded, and 28 missing; Japanese losses were estimated at 611 captured and over 3,300 killed. Another 7,000 enemy troops tried to escape by making their way through the jungle to Sarmi, but apparently few survived the ravages of starvation and disease.[55]

[55]Surg, 32d Inf Div, Quarterly Rpt (copy), Jul–Sep 44, p. 6 (quotation), and Surg, 24th Inf Div, Quarterly Rpt (copy), Apr–Jun 44, pp. 3–5. Both file 319.1, HUMEDS, RG 112, NARA. See also Rpt, Surg, 116th Med Bn, pp. 3–4, file 341-Med-0.3, box 10649, RG 407, NARA. Statistics from Smith, *Approach to Philippines*, p. 83.

Treatment of the wounded was greatly improved by use of the new antibiotic penicillin, which had begun to appear in the theater the previous November. Although the doctors did not completely understand the new drug, they used it with excellent results in suppressing wound infections. Disease rather than battle wounds produced more casualties, and yet morbidity rates were low compared to earlier campaigns. Fevers of unknown origin were the principal cause of hospitalization, followed by diarrhea that resulted from poor sanitary conditions on the congested beaches and in bivouac areas taken over from the Japanese. Mosquitoes in large numbers brought some cases of dengue, but preventive measures kept both dengue and malaria rates low. A few cases of scrub typhus appeared, as well as the usual skin diseases.

Hollandia had been a daring move, made possible by foreknowledge of the enemy's unpreparedness. The low casualties had been an unexpected bonus. A simultaneous thrust of the campaign, however, 125 miles to the east at Aitape, brought on a counterattack and a fierce battle.[56]

[56]Surg, 24th Inf Div, Quarterly Rpt (copy), Apr–Jun 44, p. 6; 36th Evac Hosp Quarterly Rpt (copy), Apr–Jun 44, pp. 2–5; Rpt, Lt Col Robert Sterling, CO, 92d Evac Hosp, to Surg, 41st Inf Div, 12 May 44, sub: 92d Evacuation Hospital (SM), Medical History of Hollandia Operation, 1 April–5 May 1944, pp. 3–7, Encl to 92d Evac Hosp Quarterly Rpt (copy), Apr–Jun 44. All file 319.1, HUMEDS, RG 112, NARA. See also Robert L. Eichelberger, in collaboration with Milton Mackaye, *Our Jungle Road to Tokyo* (New York: Viking Press, 1950), pp. 100–12, and Walter Krueger, *From Down Under to Nippon: The Story of the Sixth Army in World War II* (Washington, D.C.: Combat Forces Press, 1953), pp. 56–77. The role of ULTRA intelligence in the campaign is brought out in Edward J. Drea, *Defending the Driniumor: Covering Force Operations in New Guinea, 1944* (Fort Leavenworth, Kans.: Combat Studies Institute, 1984), pp. 3–18.

The Driniumor Battle

American forces seized Aitape in hopes of using its half-completed airfields to provide fighter cover for the larger operation at Hollandia. The initial landing by elements of the 32d Division was uneventful, although the location was unpleasant: a flat, wet coastal plain lying one degree below the Equator, compressed between the sea and the towering Torricelli Mountains to the south. The PERSECUTION Task Force was supported by medical battalion detachments, by separate collecting and clearing companies, and by hospitals attached for the operation.

Between 23 April and 3 May medical care was administered with few problems. Casualties were light; supply was adequate; and, as the troops expanded their beachhead, crossing a series of watercourses (the Nigia River, the X-ray River, the Koronal Creek, and the Driniumor River), ambulances used the Japanese-built roads. Beach medical units treated the few wounded. Among the first prizes seized were three airfields near the Tadji Plantation, just inland from the original landing beach. Here, behind the main line of resistance, a portable surgical hospital and a clearing station were set up, treating mainly nonbattle injuries and the first cases of sickness.[57]

A systematic medical organization began to take shape as the 32d Division took charge ashore. Its surgeon, Lt. Col. John F. Wurz, MC, appointed an air evacuation officer, contacted hospitals and

[57]See Quarterly Rpts (copies), Apr–Jun 44, for Surg, 32d Inf Div, pp. 1–2; 135th Med Regt, pp. 3–4, 6; 3d Port Surg Hosp, pp. 2–5; Surg, Sixth Army, pp. 6–8; and 54th Evac Hosp, pp. 1–2. All file 319.1, HUMEDS, RG 112, NARA.

units in the area, ensured that small detachments had dispensary service, and informed all units of his scheme of evacuation and the location of the hospitals. At his disposal were a 200-bed section of the 54th Evacuation Hospital, one portable surgical hospital for each regiment, a malaria survey unit, a malaria control unit, a separate clearing company, and the 30th Evacuation Hospital. Such resources were more than sufficient to support forces engaged in maintaining a defense perimeter around the airfields and in skirmishing with Japanese patrols. Company aidmen accompanied the infantry; medical personnel set up aid stations at outlying posts, rotating back to Aitape every four to seven days for rest, a bath, a change of clothes, and a hot meal.

But the invasion had isolated the Japanese *18th Army* to the east, leaving the enemy few options but to attack the forces at Aitape. As the level of combat rose, the 112th Cavalry arrived to augment the 32d Division. Outposts were reinforced, and a covering force along the Driniumor River was strengthened. About 7 miles long, the river line was held by the 112th and three battalions of the 32d's 127th and 128th Infantry. Casualties were carried back from advanced stations by native litter-bearers; amphibious trucks evacuated coastal and swampy areas; and twice a day barges transported serious cases to the 54th Evacuation Hospital, on an island 2 miles offshore.[58]

On the night of 10–11 July Japanese attackers crossed the Driniumor, overrunning an aid station in the process, and moved into the jungle beyond. American units were compelled to withdraw to the X-ray River, 3 miles to the west. Next day, while American artillery opened up, patrols clashed with the enemy. Determined to restore the Driniumor line, they attacked on the thirteenth. The 1st, 5th, and 18th Portable Surgical Hospitals accompanied them through jungle fighting that slowly destroyed the Japanese forces west of the river and reestablished American control of the river's west bank. In the foothills at Afua the 127th Infantry and the 112th Cavalry withstood desperate attacks from all directions by enemy soldiers who were starving and fanatical, with nothing to lose.

Heavy combat continued until August. The portables worked in close support of the regimental and battalion aid stations; in late July the 5th Portable Surgical Hospital was so close to the front that its staff dug foxholes and armed its ambulatory patients to defend against infiltrators. Surgeons operated at night in blacked-out pyramidal tents. In theory, each portable supported one regimental combat team, but in practice all took their wounded as they came and served all of the infantry regiments. Many serious cases went back to the 30th Evacuation Hospital, which provided the bulk of third-echelon medical care. Set up near the airfields, its 440 beds were filled with those suffering severe wounds, often of the chest, head, and abdomen.[59]

Evacuation moved by water and by jungle trails to the coast road. During

[58]See Quarterly Rpts (copies), Apr–Jun 44, for Surg, 32d Inf Div, pp. 3–6; 607th Med Clearing Co, p. 1; 54th Evac Hosp, pp. 3–4; and Surg, Sixth Army, pp. 8–9. All file 319.1, HUMEDS, RG 112, NARA.

[59]See Quarterly Rpts (copies), Jul–Sep 44, for Surg, 32d Inf Div, pp. 1–3; 30th Evac Hosp, pp. 1–2; Surg, Sixth Army, pp. 5–7; and 656th Med Clearing Co, p. 2. All file 319.1, HUMEDS, RG 112, NARA.

most of the fighting casualties were evacuated from Afua down the Driniumor to the coast, and after the big enemy breakthrough of 10–11 July the route followed was the X-ray River and Koronal Creek to the coast. Those wounded in the fighting inland were transported to the same small rivers, a two-day trip that was made as seldom as possible. Litter-bearers carried casualties from battalion aid stations to the portables. Then litter trains of native carriers, protected by infantry, brought them to collecting points to be picked up by ambulances or amphibious vehicles. Precautions were needed because the enemy dealt ruthlessly with casualties, medics, and bearers alike. Despite the guards, several trains were ambushed along Koronal Creek, coming through intact after sharp firefights. Walking wounded formed parties for mutual protection, and reached the loading points under their own power. Yet evacuation remained slow and hazardous, never more so than during an American advance into the foothills in early August. Casualties had to be carried back through densely wooded and mountainous terrain; three abdominal cases died en route, and none reached the 5th Portable Surgical Hospital in less than seventy-two hours after wounding.[60]

Inevitably, the pressure of combat increased the incidence of disease. Atabrine discipline often rested on the individual soldier, and as a result both relapses and new cases were common. "The division is well seeded with malaria," Colonel Wurz noted. "The old timers are gradually losing their physical effectiveness."[61] Although malaria survey and control units had landed early, control work had been delayed by initial problems in hiring native labor; most local tribesmen had fled the Japanese occupiers and the Allied bombardments into the mountains. Then, with control work under way, combat interfered. Spraying and oiling were necessarily confined to the area within the perimeter, while troops at outposts or on patrol remained exposed. In July every soldier was ordered to take two tablets of Atabrine a day, and more malaria control and survey units arrived. Malaria rates fell; however, in



NATIVE LITTER-BEARERS, *with soldier escort, evacuating a battle casualty down the Driniumor River to the coast*

[60]See Quarterly Rpts (copies), Jul–Sep 44, for Surg, 32d Inf Div, pp. 9–10; 30th Evac Hosp, p. 2; 656th Med Clearing Co, p. 2; and Surg, Sixth Army, pp. 6–7, plus Apr–Jun 44, pp. 9–10. All file 319.1, HUMEDS, RG 112, NARA.

[61]Surg, 32d Inf Div, Quarterly Rpt (copy), Jul–Sep 44, p. 9, file 319.1, HUMEDS, RG 112, NARA.

the meantime scrub typhus had appeared, and the disease continued to harry the fighters until they left infested Afua and until kunai grass areas near the airstrips and the Nigia River were burned or cleared.

Despite all of these major illnesses, the commonest reason why soldiers reported to sick call was a mixture of skin diseases. Some 85–90 percent of all combat troops at Aitape were affected. Their condition was miserable and essentially untreatable during combat, although rest, sunbathing, and dispensary treatment cleared up most cases as soon as the fighting ended. Infestation with hookworms and other intestinal parasites was common in line units. Completing a familiar litany of woes, the psychoneurosis rate rose sharply during and just after combat, especially among replacements newly arrived from the United States. The fundamental cause was the exhaustion and strain of jungle fighting upon those who could not be relieved while the long, confused, complex struggle continued.[62]

Yet, supported by artillery and supplied by sea and air, the much-tried soldiers and their medics possessed clear advantages over Japanese troops, who were compelled to attack despite hunger and disease that stalked them "with deadlier effects than the Allied shelling and bombing." Medical control of the swampy enclave that stretched over some 20 miles of coast was never adequate, yet disease did not become serious enough to affect operations. Supplies continued to move forward over the trails and jungle waterways, and most casualties were retrieved, treated, and extricated from the morasses and jungles. The 43d Division arrived from the South Pacific Area to participate in the last stages of the battle, and by 11 August Japanese resistance had been broken.[63]

The end of combat was sudden. By the last week of August GIs were drinking American beer, laying out sports fields, and viewing Bob Hope's USO show at Aitape. American casualties included 440 killed, 2,550 wounded, and 10 missing. In a war often characterized by small-unit actions, this was a major battle; the Japanese lost 8,821 killed and 98 captured, and American forward units suffered heavily, the 112th Cavalry losing about 27 percent of its personnel. Disease rates reached 1,776 per 1,000 troops per annum in August. Yet even while the struggle near Aitape went on, others no less severe were being fought to the west.[64]

On to Wakde and Sarmi

The next target area lay 120 miles west of Hollandia, a flat and swampy coastline with the village of Sarmi at its western end and that of Toem at its eastern end. Two miles off Toem, a pair of coral islands formed the Wakde group; the Americans called the larger Wakde Island. Two Japanese airstrips were located along the coast and a third on Wakde Island. The entire region was defended by 11,000 Japanese troops,

[62]Ibid., pp. 5–9, and Apr–Jun 44, pp. 9–10; Jul–Sep 44 for 656th Med Clearing Co, p. 2, and 607th Med Clearing Co., p. 1; Apr–Jun 44, p. 1, for Surg, Med Det, 112th Cav; and Apr–Jun 44, pp. 9–10, and Jul–Sep 44, pp. 6–7, for Surg, Sixth Army. All file 319.1, HUMEDS, RG 112, NARA.

[63]Drea, *Driniumor*, pp. 28 (quotation), 129, 132.

[64]Smith, *Approach to Philippines*, pp. 204–05; Surg, Sixth Army, Quarterly Rpt (copy), Jul–Sep 44, p. 7, file 319.1, HUMEDS, RG 112, NARA.

about half of whom were combat trained. To attack the area, General Headquarters, SWPA, created the TORNADO Task Force, whose nucleus was the 163d Regimental Combat Team, 41st Division. Shortly before the action began, a change of plans limited the objective to the island and the adjacent shoreline. Now the aim was to seize the Wakde airstrip for further operations against the larger and more strategic island of Biak, far to the west.

The landing on 17 May went almost unopposed. Elements of three battalions quickly established beachheads on the shore and seized Wakde's small neighbor island. Medical support followed. One collecting company accompanied the infantry, while the other, assisted by a portable surgical hospital, set up a station to receive casualties at Toem.[65]

But trouble developed on Wakde. The island, a cocoanut plantation before the war, turned out to be heavily fortified. From more than a hundred well-camouflaged bunkers and pillboxes, and a dozen caves, the Japanese hit the landing craft with machine gun and rifle fire. Hard fighting followed, costing the Americans 40 dead and 107 wounded; at the end of the struggle 759 enemy dead were counted, and more lay buried in the caves. Mainland observers, watching through field glasses, saw medics of the single aid station on Wakde begin to load wounded aboard landing craft as soon as the craft emptied. Serious cases were cared for by a Navy surgical team, and evacuees flooded the small facility at Toem, whose staff worked without rest for two days to provide care to all. Meanwhile, the 1- by 2-mile Wakde began to serve the purpose for which so much blood had been spilled: By 21 May Army engineers had the airstrip in operation, and the first planes landed that afternoon.[66]

To the west, substantial Japanese forces—another lost army, written off by the *Imperial General Headquarters* after Allied planes and submarines made their evacuation or resupply equally impossible—were assembling around the mainland's coastal airfields. They now formed a danger to the Wakde-Toem beachheads. Fighting began along the mainland's western perimeter, where the 506th Medical Collecting Company and the 3d Portable Surgical Hospital received over 100 casualties and evacuated by ambulance along a beach road. But heavier fighting was to come. The 158th Infantry, ALAMO Force Reserve, arrived to reinforce the Americans, and TORNADO Task Force units launched a drive up the coast toward Sarmi. Blocking the way was an eminence called Lone Tree Hill—despite its name, "a coral mass . . . covered with dense rain forest and jungle undergrowth." Adjacent masses (Hill 225, Mount Saksin) formed a natural obstacle that the Japanese fortified and prepared to defend.[67]

At the same time, smaller forces harassed the eastern end of the beachhead. On the night of 27–28 May the enemy surprised the Americans, and the

[65]Surg, Sixth Army, Quarterly Rpt (copy), Apr–Jun 44, p. 17, file 319.1, HUMEDS, RG 112, NARA.

[66]Ibid., pp. 17–18, plus 3d Port Surg Hosp, pp. 7–8, and 135th Med Regt, p. 3; and 398th Med Collecting Co, Jul–Sep 44, p. 1. All file 319.1, HUMEDS, RG 112, NARA.

[67]Quotation from Smith, *Approach to Philippines*, p. 244. See also Quarterly Rpts (copies), Apr–Jun 44, for 3d Port Surg Hosp, pp. 8–10; Surg, Sixth Army, p. 18; 135th Med Regt, pp. 6–7; and Surg, Med Det, 158th Inf, p. 1. All file 319.1, HUMEDS, RG 112, NARA.

2d Portable Surgical Hospital and one collecting company retreated under fire to the 54th Evacuation Hospital area and established a perimeter. Another collecting company dug in and held its position, taking 11 casualties among its staff and patients before the attack ended. But the situation remained perilous. The beach was too long and narrow to be held, and the enemy repeatedly infiltrated through the jungle. On 28 May the Japanese attacked in great force. Reinforcements had yet to arrive, and two battalions of the 163d Regimental Combat Team had left for Biak Island to strengthen hard-pressed troops fighting there. Remaining in the Wakde-Sarmi area were only four infantry battalions.

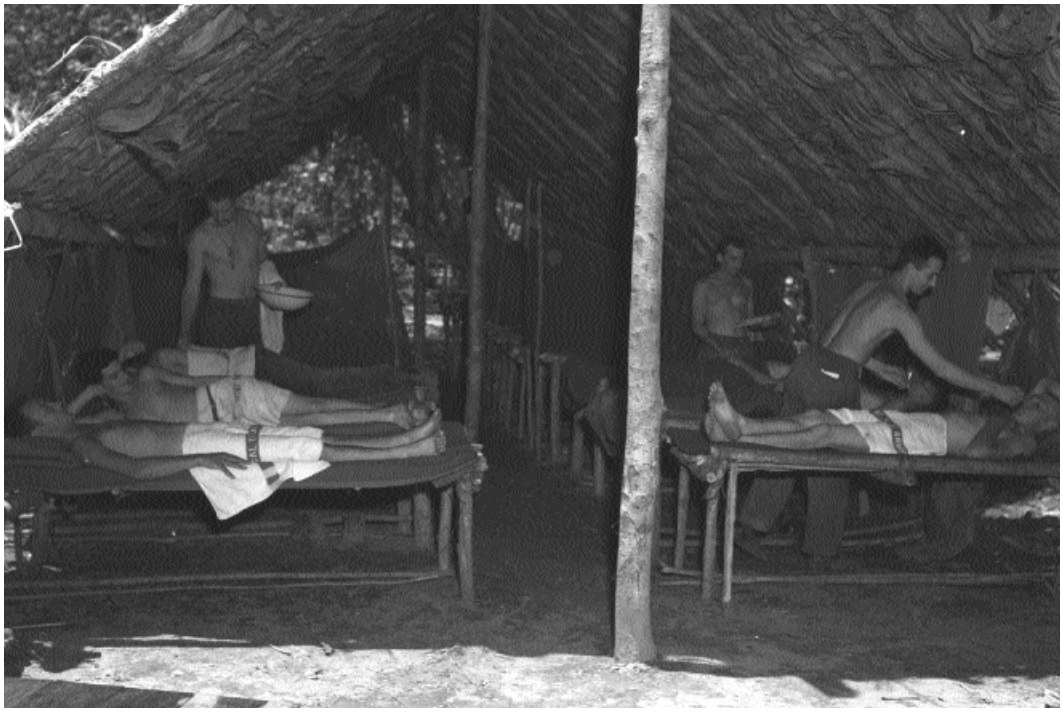
Hence, General Krueger issued orders to contract the western and eastern perimeters. As often happens, nobody thought to tell the medics and some were left behind. For three days before escaping to the Toem perimeter, Clearing Company H, ALAMO Force Reserve, was caught in a no-man's-land and forced to provide for its own defense. The unit constructed pillboxes and manned them in shifts of twenty-four hours, its soldiers armed with carbines, submachine guns, and grenades. Personnel of the 3d Portable Surgical Hospital, receiving their orders late, learned how quickly they could break camp and move when they had to. The commander, Maj. William L. Garlick, MC, remembered how "the hospital melted before your eyes." Within two hours the patients were resting under canvas beside an American mortar company. Not a single casualty had been suffered, and Garlick reported with amazement that "for the first time in our moving life there was no confusion in clearing and setting up camp."[68]

Reinforcements now turned the tide. During 7–20 June elements of the 6th Infantry Division arrived to replace the weary 158th Infantry. Supporting the division was its 6th Medical Battalion, the 2d and 11th Portable Surgical Hospitals, the 37th Field Hospital, and a 200-bed section of the 54th Evacuation Hospital. Lt. Col. Bernard J. MacCauley, MC, the 6th Division surgeon, now became the TORNADO Task Force surgeon. The attack resumed, with hard fighting in the rugged and heavily jungled terrain around Lone Tree Hill. Here the many casualties strained the available medical facilities; the 20th Infantry, 6th Division, suffered 305 on the first day alone. Litter-bearers were hard-pressed, with no time to rig cables and move the wounded by tramway; instead, squads of six, working in relays over sloping terrain, carried casualties from the forward aid station to an advanced ambulance post, seventy-five yards beyond.[69]

The fierce struggle continued for three days, with frontline medical units using over 1,000 pints of plasma. Under the circumstances the quality of care was admirable, and most casualties arrived at the rear in good condition. Normally a 25-bed facility, the 11th Portable Surgical Hospital expanded to 50, admitting 102 during 17–27 June. In one four-day period the hospital per-

[68]See Quarterly Rpts (copies), Apr–Jun 44, for 3d Port Surg Hosp, pp. 10–11 (quotations); 135th Med Regt, pp. 6–7; and Surg, Sixth Army, pp. 19–20. All file 319.1, HUMEDS, RG 112, NARA.

[69]Rpt (copy), CO, 6th Med Bn, to CG, 6th Inf Div, 19 Jul 44, sub: Operational Report, pp. 1–2, file 306-Med-0.3; 11th Port Surg Hosp Historical Rpt, 30 Aug 44, p. 2, file 319.1; Quarterly Rpts (copies), Apr–Jun 44, for 54th Evac Hosp, pp. 2–3, and Surg, Sixth Army, pp. 20–21, file 319.1. All in HUMEDS, RG 112, NARA.



11TH PORTABLE SURGICAL HOSPITAL MEDICS TAKING CARE OF CASUALTIES

formed eighty-seven operations, with only 1 death. The operating room staff worked continuously for seventy-two hours, taking only an occasional nap. The 37th Field Hospital set up on the shore of Maffin Bay, in direct support of the fighters; the 54th Evacuation Hospital worked at Toem. Air evacuation from the Wakde strip carried evacuees to Hollandia, Nadzab, or Finschhafen, functioning smoothly throughout the struggle. SWPA's hospital ships visited the enclave, providing a supplementary means of evacuation.[70]

Defeat at Lone Tree Hill broke the Japanese, who had fought a desperate but hopeless battle. Now the Americans moved westward, cleaning out the remaining pockets of resistance. The mop-up included some hard fighting and cost a number of casualties. By the end of July the 31st Infantry Division had relieved the 6th Division, and on 1 September a regimental combat team of the 33d Infantry Division replaced the 31st as the garrison force in an area now secure. The next day General Krueger declared the Wakde-Sarmi operation over. From 17 May through 1 September American losses were approximately 400 killed, 1,500 wounded, and 15 missing. The Japanese lost 3,870 killed and 51 captured. Since only about 2,000 enemy troops remained in the area, many of

[70]See Quarterly Rpts (copies), Apr–Jun 44, pp. 21–22, and Jul–Sep 44, pp. 8–9, for Surg, Sixth Army; respectively, p. 3, and pp. 2–3, for 54th Evac Hosp; and pp. 1–2, and pp. 1–2, for 37th Field Hosp. All file 319.1, HUMEDS, RG 112, NARA. In loc. cit., see also 11th Port Surg Hosp Historical Rpt, 30 Aug 44, p. 2.

the original garrison apparently died of sickness and starvation or lay buried in blasted caves. In return for their efforts, the Allies obtained a valuable air base and a staging area for campaigns to come.[71]

On to Biak

Simultaneously with the Wakde campaign, an assault began on Biak, an island in the northwest portion of Geelvink Bay. As usual, the targets were airfields—three of them, lying on a coastal plain backed by a coral ridge covered with dense tropical rainforest. Fiercely hot, the island was unhealthy and soon to become more so, as the bodies of the slain piled up, for it was strongly defended by Japanese forces fighting from caves.

Upon this uninviting spot the HURRICANE Task Force, comprised of the 162d and 186th Regimental Combat Teams of the 41st Division, staged surprise landings on the morning of 27 May. The troops came ashore in Buffaloes over fringing reefs near the village of Bosnek, about 2 miles east of heavily defended Mokmer, Sorido, and Borokoe airfields. Initial resistance was light. Navy beach party aid stations treated the few casualties, and amphibious medical company personnel evacuated to a collecting station on Japanese-built coral jetties and from there to LSTs, where Navy surgical teams awaited them.

The first serious resistance developed as the 162d Regimental Combat Team, supported only by a collecting company, advanced west along the beach road toward the Mokmer airfield. During the afternoon and evening of D-day, casualties with mortar and gunshot wounds began to filter back to battalion aid stations and eventually to the clearing station on the beach. On D+1 fighting intensified. The Japanese, dug into the ridges and caves above the coast road, poured mortar and machine gun fire upon the 162d, especially from strongpoints called the East Caves and the Ibdi Pocket. Collecting company ambulances evacuated the wounded until the enemy built a roadblock, cutting off the route. With casualties mounting and supplies dwindling, the 162d commander ordered ammunition, water, and a portable surgical hospital to be loaded on amphibians and taken up the coast to support the isolated regiment. Once set up under a twenty-foot ridge that offered protection from mortar fire, the hospital kept three operating tables busy through the night of 28 May and most of the following day. Wounded were so numerous that only emergency surgery and administration of plasma were attempted. Amphibians ferried the casualties across the reef, and landing craft transported them to Bosnek or to the 92d Evacuation Hospital on offshore Owi Island.[72]

Seeking to flank the defenders, the 186th Regimental Combat Team set out to cross an inland plateau and descend

[71]Smith, *Approach to Philippines*, p. 278.

[72]Rpt (copy), Lt Col William H. Chapman, Acting Surg, 41st Inf Div, 30 Aug 44, sub: Medical History of Biak Campaign, pp. 2–3, file 341.26 Historical Reports, Hurricane (Biak) TF, 41st Inf Div, 27 May–19 Aug 1944; 116th Med Bn Med History (copy), pp. 2–4, file 319.1–2 (116th Medical Battalion) SWPA, 27 May–2 Aug 1944; Surg, I Corps, Quarterly Rpt (copy), Apr–Jun 44, pp. 1–2, file 319.1; Rpt, Lt Col Robert Sterling, CO, 92d Evac Hosp, to Surg, 41st Inf Div, 12 May 44, sub: 92d Evacuation Hospital (SM), Medical History of Biak Operation, 6 May–30 June 1944, pp. 1–2, Encl to 92d Evac Hosp Quarterly Rpt (copy), Apr–Jun 44, file 319.1. All in HUMEDS, RG 112, NARA.

upon the airstrips from the northeast. The 186th, attended by a collecting company and a portable, marched for four days in sweltering heat on a route without water and through thickets of towering evergreens, not the familiar tropical rainforest. Both supplies and wounded had to be hand-carried through harassing enemy fire. Once at the cliffs overlooking the Mokmer airfield, the infantry encountered devastating mortar and artillery fire from the inland face of the ridge. Still commanded by enemy guns, the airfield was useless. Evacuation of the wounded to Bosnek proved to be painful and slow, via exhausting litter hauls to the sea and night voyages by amphibians.[73]

During the third week in June more forces, including additional medical support, invested the airfields. General Krueger, displeased with the slow progress, replaced the 41st Division commander, Maj. Gen. Horace H. Fuller, with Brig. Gen. Jens A. Doe and sent in General Eichelberger, the I Corps commander, to take charge. Bringing with him the 34th Infantry, 24th Division, Eichelberger was able to pit larger forces against an enemy depleted in numbers, though still holding out in strong positions.

Under intensive bombardment, most defenders evacuated the East Caves. The Ibdi Pocket fell to assault. On 21 June the 162d and 186th Regimental Combat Teams reached the formidable West Caves, where the Japanese commander made his last stand. Of 900 defenders about 235 survived, and of these 109 elected to stage a banzai attack that night. All were killed; the Japanese commander, with many of his subordinates, committed suicide. The assault on the caves lasted until the twenty-seventh, when patrols penetrated the last recesses, now filled with burned and mangled bodies.[74]

Mopping-up operations resumed against some 4,000 Japanese who had escaped, and by 20 August, when Krueger declared the operation over, all organized resistance had ceased. The Japanese lost an estimated 4,700 killed and 220 captured on Biak. Most of the survivors perished later by disease, starvation, and suicide, or were killed during the long mopping up, which continued into the following year as one occupying force succeeded another. By early 1945 probably fewer than 1,500 of the original Japanese garrison were alive.[75]

The victory cost the Allies approximately 400 killed, 2,000 wounded, 150 injured, and 5 missing. Casualties to disease and stress numbered 7,234. No less than 1,000 caught scrub typhus, and about 3,500 suffered fevers of undetermined origin, reflecting not only the unhealthiness of Biak but, as the 41st Division surgeon lamented, the fact that "the laboratories attached to station and general hospitals never reach us and at times are four to five hundred miles away." American casualties totaled

[73]116th Med Bn Med History (copy), pp. 4–6, file 319.1–2 (116th Medical Battalion) SWPA, 27 May–2 Aug 1944; Rpt (copy), Chapman, 30 Aug 44, pp. 4–5, file 341.26 Historical Reports, Hurricane (Biak) TF, 41st Inf Div, 27 May–19 Aug 1944. Both in HUMEDS, RG 112, NARA.

[74]116th Med Bn Med History (copy), pp. 6–7, file 319.1–2 (116th Medical Battalion) SWPA, 27 May–2 Aug 1944; Rpt (copy), Chapman, 30 Aug 44, pp. 5–6, file 341.26 Historical Reports, Hurricane (Biak) TF, 41st Inf Div, 27 May–19 Aug 1944. Both in HUMEDS, RG 112, NARA. See also Eichelberger, *Our Jungle Road*, pp. 143, 153, and Harold Rigelman, *The Caves of Biak* (New York: Dial Press, 1955), pp. 136–55.

[75]Smith, *Approach to Philippines*, p. 392.

9,790—mark of a struggle as harsh and unforgiving as any in the Pacific war. Medical personnel suffered unusually heavy losses. Portable surgical hospitals worked in dugouts under mortar and artillery fire; litter squads were prey to snipers. In the 41st Division the medical casualty rate exceeded that of the line troops: Collecting Company C, 186th Regimental Combat Team, recorded losses of 35 percent. In testimony to their sufferings, the medics received a proportionately greater share of combat decorations than any other branch, including the infantry.[76]

Despite this record of individual heroism and collective achievement, Biak represented a backward step in both prevention and treatment. The medics had to do extraordinary things in part because too few of them were on hand. Hospitalization for the HURRICANE Task Force proved barely adequate. The 92d Evacuation Hospital provided 400 beds; each of the two clearing companies, about 250; and each of the four portables, 25—about 1,000 beds in all. Every unit had an expansion capability, which most were obliged to use. Thus, the initial allotment was equal to 6 percent of the force but declined as the fierce fighting brought in new line units, with no equivalent increase in hospital support. Because of poor intelligence on terrain, disease, and enemy fortifications, projected casualty rates were underestimated. For certain, the low shipping priority for hospitals meant that medical support for the troops oftentimes was inadequate.[77]

Proportionate to troop strength, bed strength shrank by 2.2 percent in August, even as epidemics broke out, overcrowding the hospitals further and compelling the speedy evacuation of minor cases. The ten- to fifteen-day evacuation policy contemplated in the original medical plan had to be abandoned. Meanwhile, the hospitals worked under the poorest of conditions. At Bosnek both the 92d Evacuation Hospital and Clearing Company D, 41st Division, spent the first ten days ashore in an area congested with military targets, under daily air attack. Neither could deploy fully for lack of engineer equipment to clear the wrecked and cratered area (hence, the hospital's removal to Owi). Further forward, portables sometimes worked in shell holes under mortar and artillery fire, and the clearing platoons on the beach road faced conditions just a little less perilous.

Only evacuation worked well. The 116th Medical Battalion took responsibility for all evacuation ashore and the amphibious medical company for moving casualties from the beach. Roads enabled vehicles to do most of the work, a substantial advantage even though broken springs, caused by the rough coral tracks, shook the wounded. Though difficult and dangerous, most litter hauls were short, down to the nearest road, and the 135th Medical Regiment had provided additional litter-bearers. Along the shore, amphibious vehicles did yeoman service. Offshore evacuation was coordinated by a beach

[76]Ibid. See also Interv, Lt Col William J. Shaw, 2 Sep 44, p. 5 (quotation), file 000.71; Surg, Sixth Army, Quarterly Rpt (copy), Jul–Sep 44, pp. 10–12, file 319.1; 116th Med Bn Med History (copy), pp. 8, 11, file 319.1–2 (116th Medical Battalion) SWPA, 27 May–2 Aug 1944; Rpt (copy), Chapman, 30 Aug 44, pp. 7–9, file 341.26 Historical Reports, Hurricane (Biak) TF, 41st Inf Div, 27 May–19 Aug 1944. All in HUMEDS, RG 112, NARA.

[77]Rpt (copy), Chapman, 30 Aug 44, p. 13, file 341.26 Historical Reports, Hurricane (Biak) TF, 41st Inf Div, 27 May–19 Aug 1944, HUMEDS, RG 112, NARA.

party medical officer and performed usually at night; LSTs, hospital ships, and, ultimately, aircraft carried the wounded to Hollandia for treatment. But efficient evacuation in combination with inadequate hospitalization meant depletion of the fighting units—a throwback to the conditions of Buna.[78]

The epidemics of Biak marked a failure of preventive medicine in the face of great odds imposed partly by nature, partly by the enemy. The island presented sanitation problems that proved unanswerable under combat conditions. Countless flies bred in the abandoned Japanese food dumps that lined the beach and on the unburied dead that lay aboveground or deep in caves; both the dumps and the dead were all too close to Army kitchens. Disposal of offal, body waste, and corpses alike was made difficult by a hard subsoil of coral and lava that prevented quick burial. The little water that was available was polluted, not only by decaying flesh but also by alkalies leached from the coral. Bad water and abounding flies both contributed to outbreaks of diarrhea and dysentery that harried the troops.[79]

But the most serious medical problem was scrub typhus. On Biak and the small neighboring island of Owi 1,050 cases were recorded in July and August 1944, about as many as in the whole Southwest Pacific Area for the previous two years. Although fewer of those who fell ill died than in previous outbreaks, the disease put its victims, most of whom belonged to the Army Air Forces, out of combat for about nine weeks. No preparation had been made to meet the disease, for in earlier campaigns it had always occurred in kunai grass, from which Biak was free. But here large areas were covered with low ferns and rotting vegetation inhabited by rats, which harbored the mites whose larvae transmitted scrub typhus.

As the incidence rose to epidemic proportions, General Denit sought help from the United States of America Typhus Commission—an interservice group established by executive order under the leadership of the Army Medical Department. Two experts arrived at Biak on 18 July. After studying the flora and the rats and mites, they discovered the presence of two new species of mites implicated in spreading the disease. They then assisted in implementing control measures and helped to indoctrinate the troops in the proven methods of prevention—impregnating clothing with either dibutyl or dimethyl phthalate, clearing underbrush from unit areas, and killing wild rats. Scrub typhus cases were concentrated at the 92d Evacuation Hospital for a long course of nursing care, followed by evacuation to rear bases, sometimes as far as the zone of interior.[80]

[78]116th Med Bn Med History (copy), an. 3 to Admin Order 1, Hurricane TF Med Plan, p. 4, file 319.1–2 (116th Medical Battalion) SWPA, 27 May–2 Aug 1944; Rpt, Sterling to Surg, 41st Inf Div, 12 May 44, sub: Biak Operation, pp. 2–4, Encl to 92d Evac Hosp Quarterly Rpt (copy), Apr–Jun 44, file 319.1; Rpt (copy), Chapman, 30 Aug 44, pp. 3, 5–6, file 341.26 Historical Reports, Hurricane (Biak) TF, 41st Inf Div, 27 May–19 Aug 1944. All in HUMEDS, RG 112, NARA. In loc. cit., file 319.1, see also Quarterly Rpts (copies), Apr–Jun 44, for 135th Med Regt, pp. 4, 6–7; Surg, I Corps, p. 14; and Surg, Sixth Army, pp. 24–26, plus Jul–Sep 44, p. 11.

[79]Rpt (copy), Chapman, 30 Aug 44, p. 7, file 341.26 Historical Reports, Hurricane (Biak) TF, 41st Inf Div, 27 May–19 Aug 1944, HUMEDS, RG 112, NARA.

[80]Ibid., p. 8, file 341.26 Historical Reports, Hurricane (Biak) TF, 41st Inf Div, 27 May–19 Aug 1944; Surg, Sixth Army, Quarterly Rpts (copies), Apr–Jun 44, pp. 29–30, and Jul–Sep 44, pp. 12, 24–26, file 319.1; Ltr (copy), Lt Col Cornelius B. Philip to Surg, USAFFE, 5 Aug 44, sub: Scrub Typhus on Owi and Biak Islands, pp. 1–5, Historians file. All in HUMEDS, RG 112, NARA.

The HURRICANE Task Force also underwent the first epidemic of infectious hepatitis in the Pacific war. The disease appeared a few days after the first landing and peaked during the week ending 2 September at a rate of 712 per 1,000 troops per annum—clearly, an outbreak that could have decimated the force, had it continued at the same level. A special team came from the United States to investigate, but learned nothing new about a disease whose agent was yet to be discovered. Tests suggested that the virus could be found in body wastes, which led medical officers once again to stress the need for preventing food and water contamination. In contrast to the spectacular symptoms of scrub typhus, those of hepatitis were chiefly lassitude, loss of appetite, and jaundice. Usually the jaundice cleared in one to five weeks, and the patient recovered rapidly; the occasional fatal case resulted from acute yellow atrophy of the liver. Treatment consisted chiefly of rest, which meant evacuation for most. Both the major diseases of the Biak campaign—one caused by rickettsiae, the other by viruses—were reminders of the fallibility of preventive medicine and the continuing dangers of the Southwest Pacific environment, even in an age when many once deadly infections were becoming controllable. The failures also pointed up the need of planners for accurate and timely medical intelligence.[81]

[81]Surg, Sixth Army, Quarterly Rpt (copy), Jul–Sep 44, pp. 12, 26, file 319.1; Rpt (copy), Chapman, 30 Aug 44, p. 8, file 341.26 Historical Reports, Hurricane (Biak) TF, 41st Inf Div, 27 May–19 Aug 1944. Both in HUMEDS, RG 112, NARA. See also Philip, "Scrub Typhus and Scrub Itch," in Hoff, ed., *Communicable Diseases: Arthropodborne*, pp. 284–347, and Henry M. Thomas, Jr., "Southwest Pacific Area," in Havens, ed., *Activities of Medical Consultants*, pp. 536–59. Penicillin and the sulfa drugs were useful against bacterial infections but not against viruses and rickettsiae.

Conquest of the Vogelkop

With Biak in his hands, MacArthur moved against the smaller island of Noemfoor to advance his air bases and cut the enemy's remaining lines of supply and reinforcement. The victory was comparatively easy, for the airstrips fell in short order. Thereafter, the fighting consisted mainly of energetic patrols that hunted out the remaining Japanese.

At least part of the reason for the weak defense was starvation. The captured Japanese suffered from malnutrition, but much worse was the condition of Formosan and Javanese laborers. Eating less than the Japanese, and forced to do exhausting work on the airfields of Noemfoor, these unfortunates were riddled with malaria, beriberi, and dysentery. Of 3,000 laborers the Japanese had originally brought to the island, only 403 survived to be liberated. An American clearing company treated the survivors and then transferred them to a Dutch civil affairs unit that accompanied the CYCLONE Task Force, the designation given to the Noemfoor operation forces.

Other and even grislier evidence documented the failure of the Japanese supply system. About 1 August American patrols began to discover Japanese bodies with fleshy portions cut away. Later, American dead left outside the defensive perimeters overnight were recovered in similar condition. Prisoners acknowledged that they had resorted to cannibalism, with freshly killed Formosans as the principal victims. Some tribes of New Guinea had tradi-

tionally performed ritual cannibalism, but at least one desperate small unit of the Japanese Army practiced it on Noemfoor, as individual soldiers had at Buna, merely to delay starvation.[82]

Four weeks after Noemfoor, on 30 July 1944, the last act began as Allied forces landed unopposed on the Vogelkop Peninsula to seize a region near Cape Sansapor and construct new airfields. By this time *the Imperial General Headquarters* had written off New Guinea, which the now depleted and harried enemy shipping could no longer supply or reinforce under the attacks of land-based aircraft. The defenders of Sansapor fled into the hills.

But if the medical personnel of the 6th Division expected an easy time, they were disappointed. The Japanese might be defeated, but New Guinea remained hostile. A new and severe scrub typhus epidemic broke out in August, and by the end of September 931 cases had been recorded, with a fatality rate of 3.4 percent—higher than at Biak. Again, no kunai grass gave warning of the disease; here a rank Bermuda-like grass harbored the vectors, and the troops who slept on the ground were apt to rise with the telltale marks of infection. In one regiment 403 were hospitalized within the first twenty days ashore, including the regimental commander, his executive officer, ten staff officers, and five company commanders.[83]

Strict control measures were imposed, and gradually new admissions dropped. But the sick remained to be cared for. The clearing company of the 6th Medical Battalion was swamped with those who were too sick to be moved. On 15 August the 29th Evacuation Hospital arrived, and by nightfall held 630 patients in place of its normal 400. Nursing care remained intense, for scrub typhus cases could not safely be evacuated during the critical first three weeks, when complete bed rest, spoon feeding, and bedpan and urinal use were necessary. The burden was too great for the ward personnel, and drivers from the motor pool, mess personnel, and sanitation teams had to be pulled in to assist. Each victim was out of full service for about nine weeks; even after returning to duty, he remained weak, tired, and clumsy. The forces at Sansapor lost 60,000 man-days to the disease, which demonstrated that at the end of the New Guinea fighting as at the beginning, and despite ever-growing sophistication in preventive medicine, the environment could be a more dangerous foe than the enemy.[84]

With the capture of Sansapor the long, often desperate struggle for New Guinea came to an end. Now thrusts against the Netherlands East Indies and the Philippines impended—no longer a remote dream but an almost present reality. The danger to the Japanese occupiers of the Philippines did not come from MacArthur's forces only.

[82]See Quarterly Rpts (copies), Jul–Sep 44, for Surg, Sixth Army, pp. 12–15; Surg, Med Det, 158th Inf, p. 1; 3d Port Surg Hosp, pp. 4–10; and 71st Evac Hosp, pp. 2–3. All file 319.1, HUMEDS, RG 112, NARA.

[83]Philip, "Scrub Typhus and Scrub Itch," in Hoff, ed., *Communicable Diseases: Arthropodborne*, pp. 287–88.

[84]Ibid., pp. 288–91; Mae Mills Link and Hubert A. Coleman, *Medical Support of the Army Air Forces in World War II* (Washington, D.C.: Office of the Surgeon General, USAF, 1955), pp. 811–14; [6th] Division Public Relations Section, *The 6th Infantry Division in World War II, 1939–1945* (Washington, D.C.: Infantry Journal Press, 1947), pp. 52–59. See also Quarterly Rpts (copies), Jul–Sep 44, for Surg, Sixth Army, pp. 15–19, and 29th Evac Hosp, pp. 1–2, file 319.1; and Rpt (copy), CO, 6th Med Bn, to CG, 6th Inf Div, 19 Jul 44, pp. 2–3, file 306-Med-0.3. All in HUMEDS, RG 112, NARA.

While soldiers, sailors, and marines fought in the South and Southwest Pacific, others advanced across the central Pacific, only a few hundred miles to the north but, for the medics who supported them, a world away from the jungled islands of the Solomons and New Guinea.

CHAPTER VII

The Fortified Islands

For a time in the spring of 1943, before opting for a balanced advance in the Pacific, the Joint Chiefs considered the possibility of selecting the central Pacific for the main American effort against Japan, in part because of its relative freedom from disease. In fact, the absence of endemic malaria and scrub typhus sharply distinguished conditions in the central region from those farther south. Yet other perils existed in plenty. Many central Pacific islands were too small for the invaders to land on an undefended or lightly defended shore; costly frontal assaults were unavoidable. And disease, though less severe than on the jungled islands, was by no means absent.

Planning for the campaigns fell to the Joint Staff, set up by Admiral Nimitz in September at his headquarters. Its Logistics Division included a medical section of two officers, Navy Capt. Thomas C. Anderson, MC, and Lt. Col. Romeyn J. Healy, Jr., MC, who also worked in the Joint Intelligence Center, Pacific Ocean Areas, serving in effect as a medical G–2 to the Joint Staff. Army participation in medical planning and theater coordination increased in early 1944 with the assignment of a second medical officer; shortly afterward, a senior surgeon of the U.S. Public Health Service joined also, to assist in planning for civil affairs and military government in conquered and liberated areas. Thereafter, as the breadth and complexity of the Central Pacific Area campaigns increased, the medical section grew not only in number but also in experience and sophistication.[1]

Good medical intelligence on selected targets was often sketchy because of their long occupation by the Japanese. Both Army and Navy intelligence-gathering agencies made relevant data available to medical planners; prisoners of war with medical training and backgrounds were interrogated; and prewar sources of information were exploited to develop a picture of local diseases and vectors, sanitation, recent epidemics, and the state of public health. With such basic information in hand,

[1]Buell Whitehill, "Administrative History of Medical Activities in the Middle Pacific," block 3, pp. 22, 25–27, file 314.7; Office of the Surgeon (OofSurg), United States Army Forces in the Middle Pacific (USAFMIDPAC), "Organization of the Armed Forces in the Pacific Ocean Areas," 28 Jan 46, pp. 1, 14–15, 17, 20, 24, 28, Historians files. Both in Historical Unit Medical Detachment (HUMEDS), Record Group (RG) 112, National Archives and Records Administration (NARA), Washington, D.C. The latter manuscript was derived from "History of the Medical Section, Logistics Division, Joint Staff, CINCPAC-CINCPOA," prepared in 1945 and presently in the files of the Naval Historical Center Operational Archives, Washington, D.C.

planners sought to prepare U.S. forces for short but intense operations on islands, most of which were primitive but some of which were heavily settled by friendly or hostile populations.

In the Central Pacific Area, as in the South and Southwest Pacific Areas, combat team organization determined the basic support requirements. The aim was to saturate the island battleground with small relatively self-contained medical support units that could work either alone or in combination with others. The Joint Staff planners sought to provide each reinforced division of about 20,000 troops, in addition to organic medical personnel, with a field hospital; two portable surgical hospitals, or the equivalent in auxiliary surgical detachments; one malaria control detachment; and one malaria survey detachment. The portables quickly proved their value, supporting anything from a divisional or separate clearing company or a field hospital to a small landing force that was isolated. Surgical detachments often augmented field hospital platoons, collecting companies, or clearing stations by providing forward surgery for the seriously wounded. But experience showed that the portable, with its component of 33 trained enlisted men, gave greater flexibility and depth than the surgical unit of a few medical officers, a single surgical nurse, and a surgical technician.

Since mobility counted for little on tiny islands and bed strength was crucial, clearing companies often received additional equipment that enabled them to operate as 200–400-bed hospitals. Proper distinctions between smaller and larger islands, however, were not always made. On tiny coral islands the expanded clearing station played a useful role; on larger landmasses its relative immobility restricted the support that it could offer to a constantly shifting battle line. Similarly, the semimobile evacuation hospital proved to have little place on the atolls, and its absence from the medical service of the Central Pacific Area caused few difficulties there. On the larger islands, however, where several divisions were engaged, the unit might have been highly useful, and the efforts of field hospitals to function in its place proved unsatisfactory, for lack of equipment and specialized professional skills.[2]

Landings were planned in accord with familiar amphibious doctrine. Company aidmen were to land with the assault platoons and initiate care for the wounded on the beach. The battalion medical section usually landed with the fifth wave and the collecting platoon with the seventh and eighth waves. The battalion aid station would work on the beach until relieved by the collecting platoon; shore party medical sections would set up near the beach as well. Clearing stations were to follow as soon as enough ground had been won to provide them a site free from small-arms fire. The brevity of the fighting on most islands meant that all wounded who could not immediately return to duty must be evacuated to the transports waiting offshore. Each task force carried

[2]"History of the United States Army Forces, Middle Pacific and Predecessor Commands, During World War II, 7 December 1941–2 September 1945," pt. 7, "Administration of Manpower," 12:2642–44, Ms 8–5.6 AA 7/3. See also "History of Office of the Surgeon, United States Army Forces, Middle Pacific and Predecessor Commands, 7 December 1941–2 September 1945," sec. 2, "Central Pacific Area," pp. 61–63, Ms 8–5.6 AA 30/2 (hereafter cited as "History of OofSurg, USAFMIDPAC"). Both in files of U.S. Army Center of Military History (CMH), Washington, D.C.

with it all the food, medicines, and other supplies the landing forces would need for thirty days—even the drinking water. Ashore, the assault forces drank from their canteens, from coconuts, and from tanks of chlorinated water; later, while using distillation equipment to make seawater potable, deep wells were dug.

The experience of the other Pacific theaters clearly influenced these arrangements. The Central Pacific Area benefited from its late start as a combat theater, but by the same token found only limited opportunities to introduce important innovations. What the Joint Staff planners needed to refine amphibious warfare in their theater was the experience of actual operations. This came quickly in the autumn of 1943.[3]

Winning the Gilberts

The first targets were three of the sixteen coral atolls that make up the Gilbert Islands. Lying athwart the Equator more than 2,000 miles from Hawaii, the Gilberts, with their coconut palms and Micronesian inhabitants, formed an outlying ring of the Japanese defense perimeter. Unknown to Americans at the time, the *Imperial General Headquarters* had already decided to establish its main line in the Caroline and Marianas Islands. However, the garrisons of the Gilberts and Marshalls had been strengthened rather than weakened, in order to fight the most effective possible delaying action.

Makin was a triangular atoll, comprising the two large islands of Kuma and Butaritari, where the Japanese had a seaplane base with substantial fortifications and a permanent garrison. A little over 100 miles to the south lay heavily defended Tarawa, a similar subgroup whose main island of Betio contained an airfield and the administrative headquarters for their naval forces in the Gilberts. Still farther south, Apamama was the site of a lightly defended observation post.[4]

Under Admiral Nimitz, Vice Admiral Raymond A. Spruance commanded the Central Pacific Forces, including the V Amphibious Force under Rear Admiral Richmond Kelly Turner. Turner also commanded Task Force 54, the assault force—consisting of the Northern Attack Force (Makin), the Southern Attack Force (Tarawa), and lesser attack groups—whose troops were supplied by the V Amphibious Corps under General Holland Smith. Components of the corps were the 2d Marine Division under Maj. Gen. Julian C. Smith, USMC, and the 27th Infantry Division under Maj. Gen. Ralph C. Smith. Supporting the Makin operation was the Army's task force, consisting of the 27th's 165th Infantry and elements of its 105th Infantry. The task force surgeon was Lt. Col. Abraham Norman, MC, then commander of the 27th's 102d Medical Battalion and later division surgeon.

The medical service provided an enlisted medic for every 10 and a doctor

[3]CSurg, USAFPOA, Annual Rpt, 1944, p. 4, file 319.1–2; Whitehill, "Medical Activities in Middle Pacific," block 3, pp. 24, 30, file 314.7. Both in HUMEDS, RG 112, NARA. See also "History of OofSurg, USAFMIDPAC," sec. 2, pp. 60–63, 67–69, 88–99, Ms 8–5.6 AA 30/2, CMH.

[4]Whitehill, "Medical Activities in Middle Pacific," block 18a, pp. 3–5, file 314.7, HUMEDS, RG 112, NARA; Philip A. Crowl and Edmund G. Love, *Seizure of the Gilberts and Marshalls*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1955), p. 210. Unless otherwise noted, the combat narrative for the Gilberts and Marshalls campaigns is drawn from the latter source.

for every 250 combatants. In addition to company aidmen and battalion medical detachments, the 27th Division's 102d Medical Battalion was present to strengthen the battalions and to provide second-echelon support. The clearing company was augmented by a provisional portable surgical hospital—the first to appear in the Central Pacific Area. The portable, provided by General King, the USAFICPA chief surgeon as of August 1943, soon proved to be a highly adaptable unit, able both to maintain and to move itself in the field and to assume many different guises as needed. Added equipment allowed the collecting company to establish a 400-bed hospital. In anticipation of combat, medics gave physicals and immunizations, checked their equipment, and completed their own training.

Supplies were ample. Most, including medical requirements, were palletized—covered with waterproof paper and strapped to wooden sleds for easy movement ashore. Combat loading ensured that all members of a unit occupied the same ship and that their supplies were arranged for easy access, with the items needed first on top. Each battalion carried supplies for ten days on its assigned vessel. Supporting the fleet was a mobile supply base of tenders, repair ships, tugs, minesweepers, and fuel barges. Among its stores was an additional thirty-day supply of food and medicines for 10,000 troops.[5]

On 10 November, while the marines headed for Tarawa, the Army's 7,000-man task force, plus artillery and a garrison that included a provisional field hospital, embarked on a nine-day voyage from Pearl Harbor. Rounds of daily calisthenics and debarkation drills helped to pass the time. Amply supported but as yet untested in combat, the Northern Attack Force arrived off Makin Atoll on the night of 19–20 November.[6]

Aerial photographs had revealed that the Japanese defenses were concentrated around the seaplane base on the lagoon shore, where several piers jutted into the water. Two tank barriers crossed the narrow island of Butaritari from lagoon to ocean, and in between lay a heavily defended area with pillboxes and gun emplacements that Americans called the Citadel. In the first landing at 0830, the 105th Infantry, followed by the first and third battalions of the 165th Infantry, came ashore at the western end of the island. In the second, two hours later, the remaining battalion of the 165th landed on the lagoon shore between the tank barriers, splitting the defenders.

Opposition to the landing on the western beaches was sporadic and ineffective. Fortunately, most of the 800 defenders clung to the Citadel, and most of the troops, despite unfavorable tides that delayed the landing of supplies, were ashore by the end of the first day. Company aidmen landed with their units, and medics who accompanied the Army engineers, coming in with the second and third waves, set up aid stations. Then followed the battalion medical sections, the collecting company platoons, the portable surgical hospital, and the clearing company.

[5]Whitehill, "Medical Activities in Middle Pacific," block 18a, pp. 5–10, file 314.7; Surg, 27th Inf Div, Annual Rpt, 1943, encl. 4, pp. 1–2, file 319.1–2. Both in HUMEDS, RG 112, NARA. Palletizing had been used in the Aleutians, though not so extensively.

[6]Samuel Eliot Morison, *History of United States Naval Operations in World War II*, 15 vols. (Boston: Little, Brown and Co., 1947–62), 7:86–90, 102–07.

Trouble developed on the beaches along the lagoon shore, where the Japanese had concentrated. Here the invaders were peppered by small-arms and automatic weapons fire as they waded ashore. Not all the bullets came from the shore. Snipers had holed up in two wrecked ships, and American aircraft blasting at these impromptu forts delayed the landing of the medics in the later waves. Around the Citadel the infantry began to take heavy casualties. For a time a collecting platoon, a battalion aid station, and the stations of the Army shore party and the Navy beach party worked together to handle the influx of wounded. Enemy fire was heavy and accurate, and the medical detachment of the 105th Field Artillery Battalion was driven to emulate the Japanese, digging a bunker and caring for its casualties underground.[7]

During the first six hours of fighting about 4 percent of the command were killed or wounded. Most injuries were by gunshot or shrapnel, either in the extremities or in the buttocks of those who failed to keep down when crawling. Nothing could be done ashore but provide supportive measures to combat shock, control hemorrhage, and immobilize fractures. Though evacuation was usually swift—for which the crews of the amphibious vehicles or small landing craft used to transport troops from the Navy flotilla to the shore received the special thanks of the medics—little effort was made to sort casualties, and care was not uniform. Few vehicles went ashore, and the LVTs (landing vehicle, tracked), also known as "Alligators," moved only by day, for the transports withdrew at night. The wounded were moved mostly by litter from battalion aid stations to collecting stations and then to shore party aid stations. Some went untreated, reaching the transports in a dangerous condition from hemorrhage and shock, which personnel belonging to Navy hospital ship platoons treated in sick bays and improvised wards in the vacant troop spaces.[8]

The succeeding days' advance was aided by tanks, and evacuation by jeep ambulances, each equipped with welded steel racks to hold up to four litters. The Americans slowly pushed the enemy back toward the northeastern tip of the island, moving through dense foliage and marsh in the face of tenacious snipers. By D+1 the portable surgical hospital was in operation, and by D+2 the jeep ambulances were shuttling between the aid stations and the clearing station. Transports sailed with casualties, bound for Oahu, while Navy seaplanes flew a few critical cases to the Ellice Islands, about 350 miles east and 600 miles south of Tarawa. By morning of the fourth day all organized resistance had come to an end, and by 24 November the American combat forces began to depart, leaving behind a small garrison with medical support from the 1st Provisional Field Hospital. Army engineers soon began to carve out air-

[7]Whitehill, "Medical Activities in Middle Pacific," block 18a, pp. 13–20, file 314.7; Ltr, Cmdr E. R. Hering, Med Observer, Fwd Echelon, Galvanic, to CofS, V Amphibious Corps, n.d., sub: Medical Situation, Galvanic, Encl F to V Amphibious Corps Spec Staff Offs Rpt on Galvanic, The Historical Unit (THU) Note Cards, Historians files. Both in HUMEDS, RG 112, NARA.

[8]Interv, Capt Hilbert Ehrlich, 21 Dec 43, file 000.71; Whitehill, "Medical Activities in Middle Pacific," block 18a, pp. 21–26, file 314.7. Both in HUMEDS, RG 112, NARA. See also Edmund G. Love, *The 27th Infantry Division in World War II* (Washington, D.C.: Infantry Journal Press, 1949), pp. 23–55.



SHUTTLING LITTER CASUALTIES TO A CLEARING STATION

fields, and evacuation by air became standard, as in most places throughout the Pacific.[9]

Despite the fierceness of the fight, the cost of conquering Makin was not great—66 dead, 152 wounded, and 33 sick and injured. By destroying enemy gun emplacements, the pre-invasion bombardment assured that the great majority of wounds were caused by small arms, hand grenades, and small-caliber mortars, rather than by artillery. Gas gangrene infections were apparently absent. A small number of injuries, some severe, were inflicted by swords, reflecting the romanticism or desperation of the defenders. The enemy's whole garrison were either killed or captured; most fought to the death, a number committed suicide when their situation became hopeless, and one enemy officer, taken captive while wounded, resisted medical treatment, trying to bite and kick the medical officer who attended him.[10]

[9]Interv, Ehrlich, 21 Dec 43, file 000.71, HUMEDS, RG 112, NARA; Department of the Navy, Bureau of Medicine and Surgery, "The United States Navy Medical Department at War, 1941–1945," 1:177, files of Bureau of Medicine and Surgery Archives (BMSA), Washington, D.C.

[10]Interv, Ehrlich, 21 Dec 43, file 000.71, HUMEDS, RG 112, NARA.

Overall, American performance during the Makin operation was mixed. Both the complex tactical plan and the medical plan proved to be weak in several respects. Dividing the forces caused unnecessary problems throughout the early part of the fight by increasing injuries from friendly fire. Lack of combat experience among the medics showed in a variety of ways—in an excess of medical supplies dumped helter-skelter on the shores; in the haste of some units to get ashore without regard to prescribed times of landing; and in anxiety reactions, especially among the officers, after brief exposure to combat. On the other hand, the emergency work of the portable surgical hospital and evacuation by jeep ambulances over the flat and relatively open terrain were markedly successful. The Alligators saved many lives by providing the essential link between the beach and the landing craft and transports beyond the reef.

Individual medics had much to be proud of, particularly on the first day when they worked with only the supplies they carried on their backs. Yet success depended greatly upon the fact that few casualties had to be moved or treated. The events at Makin gave no indication of what might happen in fights against strong Japanese garrisons.[11]

At Tarawa Atoll the marines faced a far more numerous and better prepared enemy, entrenched in almost indestructible fortifications behind a protecting coral reef that blocked the approach of landing craft. About 3,000 well-trained Japanese soldiers held the island of Betio. Surviving the initial bombardment, they directed heavy fire against the marines, who approached the beach aboard Alligators and other amphibious vehicles. Many of the amphibians were destroyed, leaving the marines to reach shore as best they might. Once there, they had to fight their way, destroying bunkers and pillboxes as they went. In four days of savage combat some 3,000 became casualties, and of these about a third died. Further sharp but limited fighting was needed to conquer the rest of the bloody atoll.[12]

To the south, the marines quickly overcame the tiny garrison on Apamama, where most of the 23 Japanese soldiers took their own lives. But the struggles at Makin and especially at Tarawa were a warning of serious tactical and medical problems. Each attack on a very small island was, in effect, a frontal assault; heavy prelanding bombardment crippled but did not destroy the defenders. Waters near the islands were treacherous with reefs, and the attackers faced the risk of incurring many casualties who could neither receive adequate treatment ashore nor be evacuated to the ships in an acceptable time.[13]

Medical officers reviewing the reports recommended that future invasions be

[11]See Surg, 27th Inf Div, Annual Rpt, 1943, encl. 4, pp. 17–22, file 319.1–2; 147th Gen Hosp ETMD, 10 Dec 44, pp. 1–3, file 350.05. Both in HUMEDS, RG 112, NARA.

[12]"Navy Medical Department at War," 1:161–83, BMSA. On the Marine medical experience, see the narrative account of the Gilbert Islands operation, *The 2d Marine Division and Its Regiments*, prepared in 1984 by the Reference Section, Historical Branch, History and Museums Division, Marine Corps Historical Center, Washington, D.C. The classic firsthand account of the operation is Robert Sherrod, *Tarawa: The Story of a Battle* (New York: Duell, Sloan and Pearce, 1944), which gives a roster of Navy medical casualties (pp. 179–80).

[13]Statistics from Crowl and Love, *Gilberts and Marshalls*, p. 156.



TARAWA CASUALTIES ON THEIR WAY TO OFFSHORE MEDICAL CARE

supported by medically equipped amphibians, LSTs (landing ship, tank), and at least three hospital transports for each division. Jeep ambulances had proved invaluable, and more of them, better waterproofed, were needed. Among the troops ashore, they noted poor sanitary discipline as a problem for both soldiers and marines. The casual behavior of the troops, combined with the piles of rapidly decaying enemy dead (often carelessly entombed by bulldozers collapsing the captured bunkers), brought a plague of flies and an epidemic of bacillary dysentery to both Makin and Tarawa in the aftermath of the fighting. (Six percent of the Makin garrison was hospitalized for this cause.) On Makin dengue also became epidemic. As General King admitted, "Control [of mosquitoes] was very difficult, and little could be done." Another problem was the care of natives injured by the fighting; overburdened medical units proved inadequate, and the small forces left as garrisons were unable to treat the combination of war wounds and tropical diseases that afflicted their new civilian subjects. A separate and distinct medical organization would be needed to handle civil populations that could only grow greater as the war moved westward.[14]

The lessons learned in the Gilberts were harsh ones, especially when casualty rates there were compared with those of other Pacific battles. Rates of wounded in action plus killed in action per 1,000 troops per day were 5.07 at Attu, 2.63 at Biak, but 12.77 for the Army in

[14]"History of OofSurg, USAFMIDPAC," sec. 2, pp. 75 (quotation), 88–89, Ms 8–5.6 AA 30/2, CMH; Ltr, Hering to CofS, V Amphibious Corps, n.d., Encl F to V Amphibious Corps Spec Staff Offs Rpt on Galvanic, THU Note Cards, Historians files, HUMEDS, RG 112, NARA.

the Gilbert Islands and 39.65 for the marines. By supplying airfields for land-based air support, the newly conquered Gilberts contributed crucially to the next campaign, where Admiral Nimitz' command quickly demonstrated that it had learned much from the struggle just completed.[15]

The Marshalls

Lying halfway between Hawaii and New Guinea, the 700-mile-long archipelago of the Marshalls, containing natural and developed harbors, airfields, and a seaplane base, presented a tempting target. All of its thirty-four atolls and two thousand islands are flat, with none rising more than 30 feet above sea level. Most supported coconut, breadfruit, and pandanus trees, and some a thriving tropical undergrowth as well.[16]

Some Japanese strongholds in the islands could be bypassed and neutralized. But the atolls of Kwajalein, Eniwetok, and Majuro had to be taken. Heavily garrisoned Kwajalein would require two simultaneous assaults, causing General Holland Smith to divide his ground troops into four landing forces. The newly formed 4th Marine Division and the 7th Infantry Division, recently arrived in Hawaii from the Aleutians, were ordered to cooperate in seizing the islands of Kwajalein, the world's largest atoll.

The division surgeon, Colonel Potter,[17] and the 7th Medical Battalion commander Colonel Kamish, approached the problems of the new assault with their Alaskan experience as well as the knowledge recently gathered in the Gilberts to guide them. The collecting companies would be broken down into platoons, one to support each battalion landing team and the clearing company equipped with additional equipment to function as a 200-bed division hospital in case of need. A portable surgical hospital was to go ashore at Eniwetok. Backup at Kwajalein would be provided by the 31st Field Hospital, with three platoons and a headquarters section. Except for the clearing companies and the hospital platoons, whose heavy equipment was to be secured to pallets in waterproof wrappings, all medical personnel would carry their initial supplies on their backs.

Overall responsibility for the casualties that occurred between the beach and the reef fell to the medical section of the 708th Amphibian Tank Battalion. In each of the four landing groups established by Admiral Turner the Navy designated one amphibian to act as an ambulance, once its original load of assault troops had been discharged on the beach. Each amphibian ambulance was assigned a physician or highly qualified technician and three enlisted medics. Flying the red cross, these LVTs were to pick up casualties from the

[15]Percentage rates based on statistics from the following sources: Stetson Conn, Rose C. Engelman, and Byron Fairchild, *Guarding the United States and Its Outposts*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1964), p. 295; Robert Ross Smith, *The Approach to the Philippines*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1953), p. 577; and Crowl and Love, *Gilberts and Marshalls*, pp. 125, 156.

[16]Whitehill, "Medical Activities in Middle Pacific," block 18b, pp. 3–4, file 314.7, HUMEDS, RG 112, NARA.

[17]Potter's later career was a distinguished one. Only thirty-four years old at the time of the Marshalls campaign, he served with the Medical Corps until 1969, retiring as a major general after serving as the United States Army, Europe, surgeon and the Brooke Army Medical Center commander.

water and from disabled vehicles, administer first aid, carry them across the reef, and then transfer them to Navy landing craft for ferrying to the transports. If conditions offshore proved less serious than anticipated, the ambulances were to remain on the beach and work there. The 7th Medical Battalion's executive officer was assigned as medical control officer to the naval control vessel that guided each landing. Posted at the line of departure, he was to maintain contact with the beachmaster, the amphibians, and the transports, to coordinate the movement of casualties and supplies.[18]

Training for the new campaign was rigorous. In Hawaii the medics, like line troops, took long road marches, qualified in swimming, studied security measures, fired small arms, and learned the rudiments of jungle fighting. Unit field problems prepared them to work with the battalion landing teams that they were to support. Doctors and clearing platoon personnel polished their specialties in the hospitals of Oahu, and the enlisted men drew fatigue details to give the collecting platoons as much time as possible to follow their own, more field-oriented training programs. Finally, in memory of the epidemics that had followed the earlier battles, training of all personnel heavily emphasized sanitation.[19]

By the third week of January 1944 the assault forces were ready. Setting out from Oahu, the Northern and Southern Attack Forces and the Majuro Attack Group headed for the Marshalls. Majuro proved to have been abandoned by the enemy, and the American flag was raised on the morning of the thirty-first. Occupation of the various islands of the atoll followed without incident, and the medics found little to do but conduct sanitary surveys of the fortunate natives who, like the soldiers, had been spared a battle. Kwajalein was another matter.

On 31 January the convoys bearing the Northern and Southern Attack Forces arrived at the huge atoll to begin Operation FLINTLOCK. The two landed almost 50 miles apart, reflecting the size of Kwajalein, whose eighty islands surround a 655-square-mile lagoon. Flat, and covered with palm trees, the islands resemble the Florida Keys in size, topography, and climate. At the northern end of the atoll, Roi and Namur, two islands linked by a sand spit, contained an airfield and controlled the northern anchorages and entrances into the great lagoon; Kwajalein Island was similarly sited and armed at the southern end. The native inhabitants, ill-treated and forced to labor for the Japanese, proved to be well disposed to the Americans. The seizure of Roi-Namur fell to the marines of the Northern Attack Force, that of Kwajalein to the infantry.[20]

On the first day a few outlying islets fell quickly and with little resistance. Then on the morning of D+1, following a lethal naval bombardment, amphibians carried the whole assault wave of the 7th Division across the reef to Kwajalein. Soldiers of the 32d and 184th Regimental Combat Teams swarmed

[18]Whitehill, "Medical Activities in Middle Pacific," block 18b, pp. 10–15, file 314.7; Notes on OofSurg, USAFICPA, ETMD, 4 Apr 44, encl. 5, pp. 1–2, Historians files. Both in HUMEDS, RG 112, NARA. See also "History of OofSurg, USAFMIDPAC," sec. 2, pp. 75–79, Ms 8–5.6 AA 30/2, CMH.

[19]Whitehill, "Medical Activities in Middle Pacific," block 18b, pp. 16–18, file 314.7, HUMEDS, RG 112, NARA.

[20]S. L. A. Marshall, *Island Victory: The Battle of Kwajalein Atoll* (Washington, D.C.: Infantry Journal Press, Penguin Books, 1944), pp. 49–52.

ashore on Red Beaches 1 and 2 at the western end of the 2½-mile-long island. At the northeastern end were barracks, warehouses, and headquarters buildings; at the center, an airstrip neared completion. The coral island was flat and sandy, and the pre-invasion bombardment had left a cratered moonscape piled with rubble.[21]

Opposition to the landing was light, but resistance stiffened as the 184th Regimental Combat Team advanced along the lagoon side of the island and the 32d Regimental Combat Team along the ocean side. Debris blocked the troops' vision, and the enemy fought back from pillboxes, bunkers, and networks of trenches camouflaged with palm fronds. Disorganized but tenacious defense gave the battle the character of urban warfare. "You often see Kwajalein described as a 'jungle' battle," wrote historian S. L. A. Marshall, "but . . . what happened there possessed nearly all of the attributes of house-to-house fighting," with bitter skirmishes around ruined buildings and endless bloody work to be done in clearing out snipers. Frenzied resistance also occurred on nearby islands. Marshall told the story of an aidman, Pfc. Vonnie W. Gray, on the islet of Gehh, who crawled forward under fire to dress the arm of a wounded soldier. While he worked, an explosion flung another into the air, who landed with right leg shattered and bleeding. Gray went to his aid, working calmly under intense fire, "an example of courage that stimulated and enriched every fighting man who saw it. The troops would talk about it for days to come."[22]

By nightfall on 4 February Kwajalein Island had fallen, and two days later the mission of the Southern Force was complete, at a cost of 142 dead, 845 wounded, and 2 missing. Enemy losses were high—almost 5,000 dead; Japanese and Korean prisoners of war totaled 206. Meanwhile, the marines of the Northern Force had seized Roi-Namur and nearby islets, losing 313 dead and 502 wounded to the enemy's 3,500 killed.[23]

Medical Support

Two collecting companies and one clearing platoon of the 7th Medical Battalion plus four shore party medical sections supported the two regimental combat teams that fought on the large island, while collecting platoons alone handled the casualties on nearby islets. The medical battalion headquarters was set up about 200 yards inland, midway between the two landing beaches. Ambulances were landed from the first day, establishing motor evacuation, and by D+4 clearing stations were receiving wounded.

Offshore, the suppression of enemy fire by a murderous opening barrage and the presence of many amphibians brought welcome changes. No carnage like that at Tarawa occurred in the water. Amphibian ambulances evacuated from the beaches. On D+1 a platoon of the

[21]Robert D. Heinl, Jr., and John A. Crown, *The Marshalls: Increasing the Tempo* (Washington, D.C.: Historical Branch, G–3 Division, Headquarters, U.S. Marine Corps, 1954), pp. 26–27, 55–58.

[22]Quotations from Marshall, *Island Victory*, pp. 103 and 44. See also Heinl and Crown, *Marshalls*, pp. 100–07.

[23]Heinl and Crown, *Marshalls*, pp. 53–58, 108–14. Whitehill, "Medical Activities in Middle Pacific," block 18b, p. 92, file 314.7, HUMEDS, RG 112, NARA, gives the total Army wounded as 1,001.

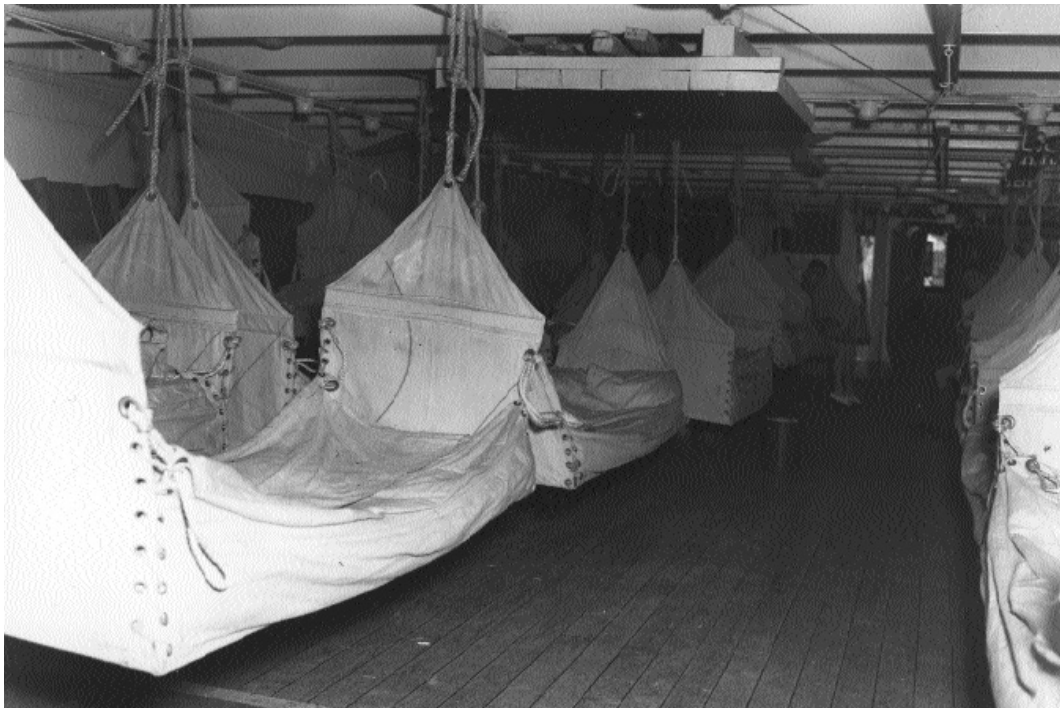


LITTER-BEARERS REMOVING A KWAJALEIN CASUALTY FROM THE FRONT LINE

31st Field Hospital landed on Ennylabegan, an islet adjacent to Kwajalein, while the other platoons worked aboard ships, apparently for the first time in the Pacific war. By D+5, however, the entire hospital was together again on the islet. Unusual was the work of two surgical teams that went ashore on another islet, Enubuj, to support field artillery units firing against Kwajalein. Lacking American wounded, the surgeons treated enemy captives who had to pass through the division headquarters on the island.[24]

Evacuation for this workmanlike operation was efficient and unremarkable. At the front, litter squads assigned to the assault companies quickly removed the wounded to the aid stations. Collecting platoons provided relief litter-bearers to battalion medical sections. Hauls were short and beds were ready at the collecting and shore party aid stations; surgeons estimated the facilities could have handled three times the number of wounded with no loss of efficiency. As jeep ambulances became available, movement of the wounded became even smoother, quicker, and less wearing. The amphibian ambulances proved invaluable in transporting casualties to the control ship, from which they were transferred to LCTs (landing craft, tank) and subse-

[24]Whitehill, "Medical Activities in Middle Pacific," block 18b, pp. 29–51, file 314.7; Notes on Rpt, 31st Fld Hosp, 1 Mar 44, sub: Recent Mission in the Marshall Islands, pp. 1–3, Historians files. Both in HUMEDS, RG 112, NARA. See also "History of OofSurg, USAFMIDPAC," sec. 2, pp. 77–79, Ms 8–5.6 AA 30/2, CMH.



HOSPITAL SHIP FITTED WITH HANGING COTS, *to handle the overflow of evacuees*

quently to transports. At high tide the LCTs evacuated the wounded directly from the beaches; at other times they were usually obliged to wait beyond the reef. For some casualties the entire trip from front line to transport or hospital ship took three hours and for others as many as fifteen; the average was a bit less than six. Relatively quick evacuation became a key to the low mortality rate that distinguished the battle for Kwajalein.

In turn, the ships (including the Navy hospital ships USS *Solace* and USS *Relief*) on hand for the operation evacuated to Oahu, a 2,100-mile voyage that took eight to twelve days. By the end of March airfields in the Marshalls had been cleared and completed, and air evacuation of the few casualties from the garrison forces began. Some complaints about the evacuation process were heard: More hospital ships would have been welcome, and too many transfers from one craft to another had taken place in the inshore waters. Yet by and large, considering the complexity of the operation and the many medical units working independently on islets (the Southern Attack Force captured twenty-six islands, of which twelve were occupied by the enemy), the process had been effective and the cooperation of the two services outstanding. Carefully prepared and veteran troops were another part of the equation; light casualties were the third. When an observer commented that the evacuation chain could easily have handled three times as many casualties, he paid tribute both to

the consequences of a well-fought battle and to the careful preparations by the Joint Staff for misfortunes that never occurred.[25]

In the aftermath of the fight, the new emphasis on sanitary measures paid dividends. Details led by officers of the Sanitary Corps sprayed latrines and decomposing bodies with sodium arsenite or paradichlorobenzene and buried the enemy dead in mass graves, some containing 1,200 bodies. A few cases of sickness occurred, providing work for a station hospital that arrived on Kwajalein and for a provisional station hospital on one of the nearby islets, but epidemics did not break out. One section of the provisional hospital devoted its attention chiefly to the Marshallese natives, meeting a need that had first been recognized during the fight for the Gilberts. On Oahu a senior medical officer of the U.S. Public Health Service joined the Joint Staff planners at Nimitz' headquarters to arrange for the care of civilians during future operations.[26]

Eniwetok

Meanwhile, the 22d Marines Regimental Combat Team and the 106th Infantry, 27th Division, gathered to assault Eniwetok Atoll, some 350 miles northwest of Kwajalein. During a five-day battle (17–22 February 1944) the marines and soldiers seized the principal islands of Engebi, Eniwetok, and Parry. Heavy opposition met the landings on Parry, costing the marines, as Betio had, about 25 percent in casualties. Working from bunker to bunker, the Americans destroyed an enemy garrison of 2,600, only 66 of whom survived the attack. Total American casualties for the campaign numbered 262 killed, 757 wounded, and 77 missing.[27]

With one exception—a medical detachment with the 104th Field Artillery Battalion that supported the marines on Engebi from a nearby islet—Army medical units ashore were concentrated on Eniwetok Island. As usual, company aidmen landed with their units, and battalion aid stations, collecting platoons, and shore party medical sections followed close behind. Evacuation imitated the pattern established on Kwajalein. The first casualties were littered to the beach; then, after coming ashore, jeep ambulances took over the task of evacuating the wounded from the battalion aid stations to the beach. Amphibians carried casualties to the waiting transports. The *Solace*, anchored off Eniwetok from 19 to 24 February, received the seriously injured from the transports, to be ferried back to Oahu. On the transport USS *Wharton*, where an entire deck had been set aside as a hospital, an Army clearing company and a portable surgical hospital worked side by side with the Navy surgeons and corpsmen.

After the battle, these same units moved to Parry Island to care for the garrison and the native population, while elements of the 36th Field

[25]Whitehill, "Medical Activities in Middle Pacific," block 18b, pp. 51–54, file 314.7; OofSurg, USAFMIDPAC, "Organization in Pacific Ocean Areas," 28 Jan 44, p. 16, Historians files; Notes on OofSurg, USAFICPA, ETMD, 4 Apr 44, encl. 5, pp. 6–8, Historians files. All in HUMEDS, RG 112, NARA.

[26]Notes on Prov Sta Hosp No. 2 Annual Rpt, 1944, p. 6, Historians files; Whitehill, "Medical Activities in Middle Pacific," block 18b, pp. 43–44, file 314.7. Both in HUMEDS, RG 112, NARA.

[27]Statistics from Crowl and Love, *Gilberts and Marshalls*, p. 365. Morison, *Naval Operations in World War II*, 7:304, gives different figures. See also Love, *27th Infantry Division*, pp. 59–111; "Navy Medical Department at War," 1:221–23, BMSA.

Hospital did the same on Engebi. The customary outbreak of dysentery followed the victory, and was suppressed by the same methods as on Kwajalein. Despite bitter fighting, medical personnel had met with few surprises. The Central Pacific Area forces had learned—seemingly, had mastered—the art of amphibious warfare. Yet there were dangers even in success. The bloody Gilberts campaign had stimulated thought and innovation. By contrast, "the relative ease with which the Marshall Islands campaign had been executed influenced the thinking in the Medical Section as it undoubtedly did in other sections and divisions of the Joint Staff to the end that an optimistic attitude had been adopted in the development of the plans for the Marianas, or FORAGER Operation." As a result, "casualty estimates proved to be too low" for the complex and desperate struggle that lay ahead.[28]

Operation FORAGER

Quick if sometimes costly victory in the Gilberts and Marshalls heartened the Joint Chiefs to advance the Central Pacific Area's schedule for Operation FORAGER in the Mariana Islands. On 12 March the Chiefs approved an attack against the islands of Saipan and Tinian, under Japanese mandate since World War I, and against Guam, an American mandate that had fallen to the enemy in the opening days of World War II.

The Marianas are of both volcanic and coral origin, an arc 425 miles long that lies about 1,000 miles from the nearest American base on Eniwetok and about 1,300 miles from Tokyo. Relatively large, the islands are diversified in form and appearance, with swamps and sugarcane fields, fair-sized towns, and precipitous mountains. The new assault would be a huge effort, involving 106,000 U.S. forces, including 50,000 soldiers. The Marianas could not fail to evoke a fanatical defense, if only because American planes operating from Saipan and Tinian could threaten the Philippines and Japan itself.

In preparation for the coming campaign U.S. forces seized undefended or lightly defended islands on approaches to the Marianas; constructed air and naval bases; and, by constant bombardment, neutralized the enemy bastion at Truk in the Caroline Islands to the south. Saipan and Tinian were assigned to the V Amphibious Corps, consisting of the 2d and 4th Marine Divisions and the 27th Infantry Division. Guam was to be assaulted by the III Amphibious Corps, formerly the I Marine Amphibious Corps, consisting of the 3d Marine Division and 1st Marine Provisional Brigade then staging on Guadalcanal.[29]

The Office of the Chief Surgeon faced formidable problems in supporting so vast an operation against distant reef-encircled islands of difficult terrain. Invasion planning began shortly after the completion of the Marshalls cam-

[28]OofSurg, USAFMIDPAC, "Organization in Pacific Ocean Areas," 28 Jan 46, p. 19 (quotations), Historians files; Whitehill, "Medical Activities in Middle Pacific," block 18b, pp. 60–74, file 314.7. Both in HUMEDS, RG 112, NARA.

[29]Whitehill, "Medical Activities in Middle Pacific," block 18d, pp. 5–7, file 314.7, HUMEDS, RG 112, NARA; Philip A. Crowl, *Campaign in the Marianas*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1960), pp. 28–29. Unless otherwise noted, the combat narrative for the Marianas campaign is drawn from the latter source.

paign. For the Saipan and Tinian operations, the theater allocated the Army's 31st Field Hospital and the 96th and 97th Portable Surgical Hospitals to assist the Navy medics supporting the marines. Three new medical units, called corps evacuation hospitals, were established to provide the marines third-echelon backup, but no similar organizations were provided to the soldiers of the 27th Division, who were seemingly destined for a reserve role. The division had its own 102d Medical Battalion, with support from the 38th Field Hospital and the 98th Portable Surgical Hospital. Finally, Admiral Nimitz alerted the 77th Infantry Division on Oahu to be ready for possible movement to Guam as the reserve. The division was supported by its own 302d Medical Battalion, the 36th Field Hospital, and the 95th Portable Surgical Hospital (*Map 9*).

Floating support would be unusually strong. Four hospital ships were provided, and the transport USS *Bolivar* was so extensively modified as to be, in effect, a fifth. An array of smaller craft, including LSTs, were fitted out to play the same role temporarily. Because of the great distances involved, casualties would be carried by sea to the Marshalls and retained in holding units until air evacuation could be instituted to Hawaii. Penicillin, which had appeared in small quantities in the Pacific theaters late in 1943, was stockpiled to be shipped by air to the front.[30]

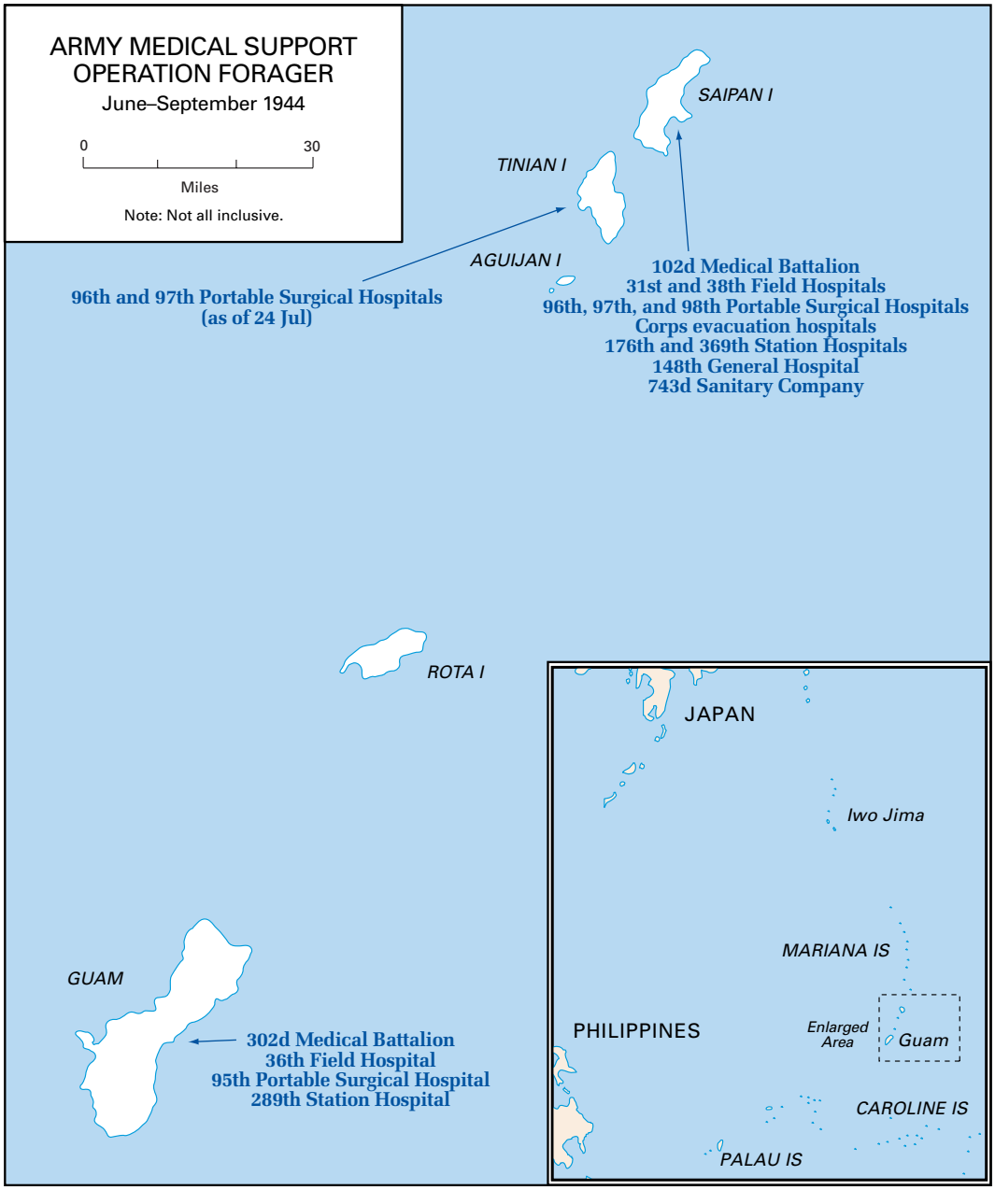
Prewar Navy experience in Guam provided a wealth of precise information on the disease environment of the coming campaign. The accidents of history and the topography of the islands had determined which vectors were present and which were not. The malaria-bearing *Anopheles* was absent from the entire Marianas chain, but the *Aedes*, which transmitted dengue, was abundant. Insect control units were assigned to the invasion forces, but shipping shortages delayed them, a fact that would cost the garrison forces dearly. On Guam sanitary conditions among the inhabitants were poor, especially in the capital, Agana. Venereal diseases and yaws were common among the native population, a light-skinned people of mixed racial stock who had endured Spanish, American, German, and now Japanese occupation. On Saipan the military and medical picture was complicated by a civilian population of 30,000, of whom 90 percent were said to be Japanese or Korean civilians—the first substantial group of enemy nationals to be met in the Pacific war.

Experience with epidemics in earlier campaigns led to improvements in preventive medicine techniques. Equipment was developed to permit airplane spraying of DDT; burial details were trained, with special squads set aside to spray corpses with sodium arsenite; and sanitary precautions were urged upon all troops. Again, field exercises and hospital training prepared the medics for their new task.[31]

Between 29 and 31 May 1944 a flotilla of 110 transport vessels set out from

[30]Combined Operations Headquarters (London), Bulletin Y/41, U.S. Operations Against Saipan and Guam in the Marianas, Sep 44, p. 27, file 370; Army Service Forces (ASF) Monthly Progress Rpt, 31 Jan 45, sec. 7, pp. 5–6, THU Note Cards, Historians files; Whitehill, "Medical Activities in Middle Pacific," block 18d, pp. 13–14, 96–97, file 314.7. All in HUMEDS, RG 112, NARA. See also "History of OofSurg, USAFMIDPAC," sec. 2, pp. 79–81, Ms 8–5.6 AA 30/2, CMH.

[31]Whitehill, "Medical Activities in Middle Pacific," block 18d, pp. 12–15, 66–67, file 314.7; Surg, Saipan Island Cmd, Annual Rpt, 1944, pp. 4–5. Both in HUMEDS, RG 112, NARA. See also "Navy Medical Department at War," 1:300–01, BMSA.



MAP 9

Pearl Harbor across the intervening 3,200 miles of ocean. A number of miscellaneous units, assigned by the surgeon general, traveled with the expedition to support the Saipan garrison, including a sanitary company and teams

of experts on various topics of medical interest. Hospitalization would be handled by the 148th General Hospital and the 369th and 176th Station Hospitals, a total of over 2,200 beds, plus a civilian annex. The Army also was to supplement Navy facilities on Guam with the 289th Station Hospital.

In spite of the medical array carried by the fleet, however, conditions aboard the transports were poor. Space was so limited that a unit larger than a platoon could neither be briefed or instructed at one time nor participate in PT, and the troops, stacked five deep, slept in miserably hot and humid quarters or on deck under blankets and shelter halves. Yet the Army units reached their destination with no worse consequences than an outbreak of diarrhea.[32]

Saipan

Northernmost of the three islands to be conquered, and the most heavily defended, Saipan was garrisoned by some 32,000 enemy forces, almost double the American intelligence estimates. Strategically placed artillery commanded the approaches to the island by sea, and two functioning airports added to its strength. Two major enemy weaknesses would affect the outcome of the campaign and the number of American casualties: The Japanese did not believe that the Americans were ready to strike so far to the west, and plans for defense in depth had been made but had not been implemented when the invasion came. The defenders would attempt to defeat their enemies on the beaches, despite the ample space and rugged topography that Saipan afforded them; by the time they retreated to the hills, they would already be a broken force.[33]

Yet the fight for the beaches was brutal. Initial air strikes by carriers devastated the defending aircraft, and the naval bombardment lasted from 11 to 15 June. But neither was sufficient to destroy the shore defenses. The marines, crossing the reef on the fifteenth, were caught by fire from Japanese artillery, mortars, and automatic weapons. Prevented by cliffs from landing anywhere but on the island's western side, the Americans were invading at the enemy's strongest point, manned by a garrison four battalions overstrength. By evening the landing was a success, but only half the planned beachhead had been secured and one-tenth of the 20,000 assault troops had been wounded. Moreover, reports from submarines and aircraft patrolling off the Philippines indicated that a large Japanese fleet had begun to move toward Saipan.

Hence, the 27th Division, the task force reserve, landed on D+1 (16 June). Two regiments, the 105th and 165th Infantry, went ashore to assist the 4th Marine Division in attacking Aslito airfield, on the southern tip of Saipan. By the eighteenth the original schedule of the Marianas campaign had been so delayed that Nimitz was obliged to postpone the invasion of Guam. Meanwhile, elements of the 27th Division fighting in southern Saipan showed a marked lack of combat efficiency. Dissatisfied, the

[32]Whitehill, "Medical Activities in Middle Pacific," block 18d, pp. 14, 20–22, file 314.7, HUMEDS, RG 112, NARA; "History of OofSurg, USAFMIDPAC," sec. 2, pp. 80–81, Ms 8–5.6 AA 30/2, CMH.

[33]On intelligence estimates, see Rpt, Lt Col John Iemp, 11 Jul 44, sub: Observer Report on the Marianas Operation (Forager), pp. 6–7, file 350.09, HUMEDS, RG 112, NARA. Iemp was a special observer sent by the Army chief of staff.

corps commander, Holland Smith, now a lieutenant general, relieved the division commander. Under new leadership, the soldiers then joined in the final drive against the Japanese redoubts in the mountainous center and the northern end of the island.[34]

By 20 June all elements of the 27th Division were ashore. Savage fighting scattered the landscape with dead and wounded, and the maps with grim nicknames—Death Valley, Harakiri Gulch. Just before daybreak on 7 July the 105th Infantry, bivouacked between the shoreline and the cliffs on the coastal Tanapag Plain, woke to a wild counterattack. Some 3,000 Japanese overran the American positions, decimating the 1st and 2d Battalions. Only at the regimental command post in Tanapag village was the attack at last halted, in house-to-house fighting.

Notable in the 3d Battalion, 105th Infantry, was the courage of the regiment's dentist, Capt. Ben L. Salomon, DC, who had volunteered to care for the wounded in place of an injured battalion surgeon. Seeing his aid station overrun, Salomon seized a rifle to cover the escape of his wounded. Then he took over a machine gun whose crew had been killed. "He seemed to be having the time of his life," the division historian related. "He fired so fast and well that witnesses say he piled up the enemy in front of his gun until he no longer had a field of fire." Two days later Salomon's body was found, "still slumped over the machine gun, riddled with bullets."[35]

Yet for a time matters were grim. By overrunning the perimeters of two battalions the enemy isolated the Americans from their supplies and cut their routes of evacuation. At a time when the battered units took over 900 casualties, the Japanese controlled the roads to the collecting stations. When Maj. Edward B. McCarthy, commander of the 2d Battalion, 105th Infantry, assembled a party to seek help for his wounded, American artillery mistakenly zeroed in, driving the infantrymen into the ocean for safety. Some walking wounded got through; moving in the opposite direction, a few litter-bearers at great personal risk slipped into the aid stations, and a single bold driver forced his jeep ambulance through in midafternoon. Others followed when an American counterattack cleared the way, and Alligators nosed up to the nearest beach to carry off the wounded. As usual in such situations, litters disappeared from the point of severest pressure with the wounded who lay on them, and aidmen had to improvise others from blankets and poles. Night had fallen before all who needed care were removed from the front.[36]

By 9 July Saipan was secure. The Japanese had ceased to exist as an organized force; their commander committed suicide after ordering the final attack, which he was too sick to lead in person. Once the enemy forces on the northern end of the island were flushed out and destroyed, the marines departed to attack Tinian, and the infantry remained on Saipan to mop up stragglers.

The victory had been costly. Of 71,034 American officers and enlisted

[34]On the Marine-Army controversy, see Crowl, *Marianas*, pp. 199–201.

[35]Love, *27th Infantry Division*, p. 457.

[36]Whitehill, "Medical Activities in Middle Pacific," block 18d, pp. 50–52, file 314.7; Rpt, CO, 102d Med Bn, 20 Jul 44, sub: Operational Report, p. 7, An C to Rpt, Surg, 27th Inf Div, 1 Aug 44, sub: Forager Operational Report, file 370. Both in HUMEDS, RG 112, NARA.

men committed to the battle, 14,111 (about 20 percent) were listed as killed, wounded, or missing—roughly the same casualty rate as at Tarawa. Losses included 3,674 soldiers and 10,437 marines. The defenders were virtually exterminated, and hundreds of the Japanese civilians who had made the island their home wrote a grim epilogue to the struggle by leaping to their deaths from the northern cliffs. Persuaded that the Americans would torture and kill them, much of the civil population had retreated with their armed forces, taking heavy casualties. Because farmers on Saipan fertilized with nightsoil, the earth was heavily seeded with the spores of tetanus and the bacilli that cause gas gangrene. Wounded civilians, lacking inoculations, were often infected. American medics were too few to care properly for internees until the battle was over, and internment camps quickly became overcrowded and filthy. In all, some 28,000 civilians were interned in the Marianas, most on Saipan and Tinian, and their sufferings added to the human toll of the fighting.[37]

The Medical Problem

With its tens of thousands of dead and wounded, the Saipan battle was marked by recurring medical crises. The marines landed first, under conditions of great danger and confusion, and Navy medics faced the task of bringing some degree of medical order to the beachhead. The task was far from easy, especially in the first three days. Marines who had survived the enemy's devastating bombardment of the landing craft huddled for almost thirty hours under an artillery barrage ashore. The beach resembled a massacre; wounded, dead and dying lay everywhere. Navy aidmen carrying seabags of medical supplies were the first to reach them, administer first aid, and attempt to remove them from the beach for treatment. But early evacuation was haphazard and slow. When battalion aid stations were set up, litter-bearers set out to retrieve survivors. Hospital corpsmen took losses of their own; in the 4th Marine Division alone, 161 medics were wounded.

The Navy beach party medical sections came ashore next, one for each battalion landing team. Composed of one medical officer and eight hospital corpsmen each, these sections constituted the link between medical care ashore and afloat. Digging in above the high water mark, they set up casualty evacuation stations that were quickly overwhelmed by the wounded. One such station treated over 1,000 troops in four days. Jeep ambulances speeded evacuation from the front lines, but were themselves hit time and again by enemy fire.

When a Japanese fleet threatened the invasion, the transports were ordered to sea, and a potential medical crisis developed. While the Battle of the Philippine Sea took shape, medical personnel ashore struggled to make do minus their backup. LSTs were not fully equipped for complex surgery, and only first aid was available on the beach. Enemy artillery and mortar fire continued to harass the beaches, causing casualties to pile up in aid and evacuation stations. On D+3 (19 June), however, the hospital ships arrived, and the transports returned a few days later. The sea battle

[37]Statistics from Crowl, *Marianas*, p. 265; see also Morison, *Naval Operations in World War II*, 8:170–212. On civilians, see ASF Monthly Progress Rpt, 31 Jan 45, sec. 7, pp. 6–7, THU Note Cards, Historians files, HUMEDS, RG 112, NARA.

ended in an American victory that permanently impaired the ability of the Japanese Navy to fight in the air.[38]

On Saipan the medical crisis was over. The 27th Division had brought ashore its organic medical personnel and collecting platoons of the 102d Medical Battalion. The worst confusion had passed, and during the next few days the remaining Army medical organization landed without incident. Among the new arrivals were the rest of the medical battalion, the 98th Portable Surgical Hospital, the 38th Field Hospital, and one platoon of the 31st Field Hospital, the second and third remaining aboard the transport USS *Storm King* to work on evacuees. The 96th and 97th Portable Surgical Hospitals, which were designated to support the marines, came ashore on 20 June (*see Map 9*).

Collecting company platoons advanced with the infantry regiments, and the clearing company, after working for a few days in a small village on southern Saipan, joined the 165th Infantry. Aid stations came under hot fire. Casualties held overnight had to be lowered into foxholes for safety, doctors worked by flashlight under cover of a blanket or raincoat, and volunteers from the division band helped to fill gaps in the ranks of litter-bearers. The 98th Portable Surgical Hospital worked near the clearing station, performing emergency stabilizing surgery, often under blackout conditions; the heaviest influx of casualties at all facilities began about 1400 hours and continued long into the night. The portables were extremely busy, treating about 2,700 casualties and performing some 225 operations; on occasion, four tables were at work simultaneously. Medical units worked within the perimeters of the organizations they supported. Defense was needed; on one occasion three Japanese soldiers burst into a clearing station, throwing hand grenades. The 38th Field Hospital did most of its work in a partly demolished Japanese hospital at Aslito airfield, functioning in effect as an evacuation facility and having a patient load that sometimes approached 1,000. The advance echelon of the 369th Station Hospital—a unit designated for garrison duty—gave welcome assistance, as did the 98th Portable Surgical Hospital late in the campaign.[39]

Of all the Army hospitals on Saipan, however, the 31st Field Hospital had the most varied experiences. When their work was done on shipboard, the two platoons from the *Storm King* came ashore. The 31st's three platoons worked separately. Setting up near the V Amphibious Corps headquarters at Charan-Kanoa, one platoon treated civilians and prisoners of war (POWs) from a nearby internment camp—although with great difficulty, given the lack of interpreters, who were fully occupied at the camp interviewing POWs. In the beginning "disposition of patients . . . was chiefly by death"; then as wounds healed, the injured were discharged to stockades or civilian internment camps, where civil affairs doctors continued

[38]"Navy Medical Department at War," 1:243–47, BMSA.

[39]Ibid., 1:265–67, BMSA. See also ASF Monthly Progress Rpt, 31 Jan 45, sec. 7, pp. 4–5, THU Note Cards, Historians files; Rpt, 38th Field Hosp, 4 Sep 44, sub: Observer's Report [on] Forager Operation, pp. 1–5, file 350.09; Rpt, Surg, 27th Inf Div, 1 Aug 44, pp. 1–3, file 370; Rpt, CO D, 102d Med Bn, 18 Jul 44, pp. 2–4, An C to ibid; Whitehill, "Medical Activities in Middle Pacific," block 18d, pp. 24–31, 37–43, file 314.7. All in HUMEDS, RG 112, NARA.



WOUNDED NATIVE CHILDREN ON SAIPAN

treatment. The other two platoons worked near the 102d Medical Battalion, where they received large numbers of casualties from the banzai charge of 7 July. For a time beds were filled to overflowing; casualties lay everywhere on the ground on litters or blankets. The Navy and portable hospital surgeons who arrived to help had to cope with the clutter of bodies and insufficient operating tables. Nevertheless, from 7 to 9 July, under air raids and shrapnel falling from antiaircraft fire, surgery went on around the clock.[40]

The 38th Field Hospital, too, had its adventures. All of its elements dug in, for all were targets of enemy attack. No component was properly defended, leading the hospital commander to urge that defense platoons be assigned to hospital units, not only to guard against the enemy but to assist with the digging-in chores that took medical personnel away from their charges, often at times when their services were badly needed.[41]

Psychiatric cases made up about 6 percent of the more than 5,000 casualties suffered by the 27th Division from all causes during FORAGER. Under the guidance of the division psychiatrist, working at the 38th Field Hospital, all were initially recorded as "combat fatigue" cases

[40]Whitehill, "Medical Activities in Middle Pacific," block 18d, pp. 25, 30–31, 42–46 (quotation, p. 44), 53, file 314.7, HUMEDS, RG 112, NARA.

[41]Ibid., p. 31, file 314.7; Rpt, 38th Field Hosp, 4 Sep 44, pp. 3–4, file 350.09. Both in HUMEDS, RG 112, NARA.

and received treatment that by now had become standard. On admission those who were able ate hot food, took a cool shower, and shaved; then, once in bed, they were visited by the psychiatrist and sedated with sodium amytal. As usual, symptoms mimicked many serious disorders—manic depression, schizophrenia, and Parkinsonism. Most stayed in the hospital only four or five days. Those who did not respond in thirty-six to seventy-two hours were evacuated to the hospital ships. Despite the unfortunate location of the hospital—in an abandoned village between a battery of heavy artillery and Aslito airfield, where sudden blasts caused the more acute cases to "literally jump off their cots"—202 of 272 patients were returned to duty by the end of the battle.[42]

Overall, the Saipan campaign proved to be more difficult and far more expensive than American commanders had anticipated. Unexpected enemy strength made a serious impact upon the medical units and their overworked personnel. Total bed capacity of all Army and Marine installations was a bit over 2,000, including expansion beds. But by 9 July the total patient census had reached 200 per day. The 31st Field Hospital had a peak expansion capacity of over 1,000 and a peak daily census of the same. The medical system, especially its field hospitals, struggled to provide care. Numerous combat casualties led the 38th Field Hospital's commander to recommend that the semi-evacuation hospital of 400 beds, with an expansion capacity of 350, or the larger "750 bed evacuation hospital be used instead of the field hospital for this type of medical coverage."[43]

These were not the dimensions of a disaster. But the figures recorded a system straining at its upper limits, and implied a maximum burden on the medics who were themselves enduring much of the danger that had faced their patients on the front lines. Overcrowded facilities for the troops also meant too rapid evacuation for some casualties, too quick return of others to the line, and generally insufficient care for civilians and prisoners of war. The flood of wounded exhausted the supply of whole blood, and continued to do so even when division personnel began to donate their own. Blood banks had to be set up on shipboard to provide whole blood for the troops invading Tinian. On Saipan many wounded made do with plasma; many who received some whole blood ought to have received more.[44]

Serious problems also developed in evacuation. On land one difficulty was the late arrival of the jeep ambulances, which were not unloaded until four or five days after the landing of the personnel who were to use them. Overburdened litter-bearers were further hampered by the need to move injured civilians and

[42]Rpt, Maj Albert D. Pattillo, OofSurg, 27th Inf Div, 20 Jul 44, sub: Report of Psychiatric Casualties in the 27th Infantry Division During the Saipan Operation, pp. 1–3 (quotations, p. 1), An B to Rpt, Surg, 27th Inf Div, 1 Aug 44, file 370, HUMEDS, RG 112, NARA.

[43]Rpt, CO, 38th Field Hosp, 21 Jul 44, sub: Operational Report, Saipan Campaign, p. 6 (quotation), An D to Rpt, Surg, 27th Inf Div, 1 Aug 44, file 370; Whitehill, "Medical Activities in Middle Pacific," block 18d, pp. 14, 43–44, 53, 55, file 314.7. Both in HUMEDS, RG 112, NARA.

[44]Comments and Recommendations, pp. 1–3, in Rpt, Surg, 27th Inf Div, 1 Aug 44, file 370; Whitehill, "Medical Activities in Middle Pacific," block 18d, pp. 47–58, file 314.7, HUMEDS, RG 112, NARA. See also Douglas B. Kendrick, *Blood Program in World War II*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1964), p. 594.

prisoners of war. Alligators, halftracks, and tanks were sometimes used to evacuate the wounded from the areas of hottest fighting, but most evacuation during the tense early days and after the enemy counterattack was done by hand, and some units, especially the hard-pressed 31st Field Hospital, were acutely short of bearers for brief periods.

But the pressure on shipping caused the greatest difficulty. The Joint Staff planners could not have foreseen how many casualties had to be taken off the island—almost 2,000 the first day—nor the absence of most transports for three days during the sea battle. The reliance upon transports for all complex surgery, pending the arrival of the hospital ships, left the severely wounded ashore without proper treatment for about twenty-four hours. After hospitals were ashore and ships were ready to receive casualties, a critical period ensued, lasting roughly from 26 June to 9 July, when an influx of wounded, sick, and injured, including civilians and prisoners, taxed all facilities. Because the number of casualties exceeded holding capacity both afloat and ashore, about 10,000, even some with only light wounds, left with ships departing the combat area—a loss of 14 percent of the total Army and Marine assault force. However desirable for the wounded themselves from a purely medical viewpoint, such figures suggested that the medical system afloat and ashore was unable to preserve the fighting strength of the forces.[45]

Mix-ups in sorting casualties among the ships compounded evacuation problems. Apparently, the Navy did not put a medical officer aboard the control vessel, the point where evacuees were transferred from landing craft to larger ships. Under the intense pressure of combat, many casualties were not triaged or properly distributed among the available ships. Certain craft had been designated to treat the lightly wounded and return them to the line, but they were often mixed with the seriously wounded. Lack of effective medical regulation mingled Americans with injured civilians and prisoners of war, and left some ships empty while others were filled to overflowing.

Some medically equipped LSTs lacked identifying marks, creating confusion that combined with the haste or ignorance of coxswains to compel multiple transfers of casualties from ship to ship. Planners had looked to the smaller assault craft and the amphibians to evacuate from the beaches to the LSTs and from the LSTs to the transports and hospital ships. But the reef surrounding Saipan halted many of the landing craft, forcing additional transfers; some wounded were shifted five times from smaller to larger craft, undergoing stress and pain at every move. The arrival of the hospital ships on D+3 eased the situation, but the number proved to be too few, leading a December 1944 study by the Joint Chiefs to recommend that two such vessels be allotted for each assault division.[46]

About nine-tenths of the casualties evacuated from Saipan went by sea. Evacuation by tactical aircraft began on 24 June, when Aslito, now renamed Isley airfield, became operational. Evacuees

[45]ASF Monthly Progress Rpt, 31 Jan 45, sec. 7, p. 5, THU Note Cards, Historians files; Whitehill, "Medical Activities in Middle Pacific," block 18d, pp. 47–58, file 314.7. Both in HUMEDS, RG 112, NARA.

[46]Rpt, CO, 102d Med Bn, 20 Jul 44, p. 4, An C to Rpt, Surg, 27th Inf Div, 1 Aug 44, file 370; Rpt, 38th Field Hosp, 4 Sep 44, p. 7, file 350.09. Both in HUMEDS, RG 112, NARA. See also "Navy Medical Department at War," 1:252, BMSA.

were flown to Kwajalein in seven hours, as against five days by water. Here they rested a few days before moving on to Oahu. Poor planning, however, characterized the early days of air evacuation: No flight surgeon screened the casualties; no attendants rode the planes; and no oxygen was available, resulting in marked dypsnea and cyanosis when planes flew above 4,000 feet. After several evacuees perished en route, rules were adopted that excluded from air evacuation those who suffered from head, chest, and abdominal wounds. Medics trained in flight medicine accompanied the planes, and oxygen masks and containers arrived on Saipan. Conditions steadily improved, as did the importance of air evacuation, though it remained an adjunct to the sea until 17 August, when the Air Transport Command's Pacific Wing took over medical flights from the Marianas. Now C–54s, staffed with corpsmen and flight nurses, bore the wounded in conditions of relative safety and comfort, and the number of air evacuees quickly came to equal or exceed the number carried by ships.[47]

Unloading supplies at Saipan was a difficult process, slowed by the barrier reefs and by the fact that transports, to avoid enemy air and submarine attacks after dark, stood out to sea at nightfall. The withdrawal of all ships during D+2 to D+5 slowed the work further. The 102d Medical Battalion lost 5–10 percent of its initial supplies—tents, beds, blankets, and mosquito nets, among other things—either in transit to the beach or in the confusion of the dumps. Meanwhile, the great number of casualties overwhelmed the system and exaggerated the materiel losses.

By D+3, however, the division medical supply dump was in operation, and when the transports returned a few days later, the system began to work fairly well. Until then, units and individual medics made do with the supplies they carried with them. Throughout the initial disorder and later stabilization, the technique of lashing packages to wooden pallets covered with waterproof cloth or paper proved its utility. Protected from the wet, supplies were located on the beaches more easily than in separate containers, and were hauled to inland dumps by tractors rather than carried by labor details. Palletizing had been tried in the Aleutians, the Gilberts, and the Marshalls, but became the norm in the Marianas; at Saipan the 27th Division palletized 80 to 90 percent of its supplies, leading even the marine commander to comment on the advantages of a system his own service had hitherto been slow to employ. Resupply was standardized as well. The USASOS provided automatic block shipments of special medical maintenance units, each meant to supply 2,000 troops for fifteen days. Some imbalances occurred, with excesses of a few items and shortages of others, simply because the course of events could not be foreseen. No supplies were brought for civilian care, but the large amounts of captured Japanese materiel took up the slack.[48]

[47]Whitehill, "Medical Activities in Middle Pacific," block 18d, p. 56, file 314.7, HUMEDS, RG 112, NARA; "History of OofSurg, USAFMIDPAC," sec. 2, p. 82, Ms 8–5.6 AA 30/2, CMH.

[48]ASF Monthly Progress Rpt, 31 Jan 45, sec. 7, pp. 3–4, THU Note Cards, Historians files; Rpt, 38th Field Hosp, 4 Sep 44, p. 6, file 350.09; Rpt, Surg, 27th Inf Div, 1 Aug 44, pp. 3–4, file 370. All in HUMEDS, RG 112, NARA. See also Charles M. Wiltse, *Medical Supply in World War II,* Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1968), pp. 473–74.



UNLOADING SUPPLIES ON A SAIPAN BEACH

The battle of Saipan shared with other Central Pacific campaigns the characteristic that most casualties resulted from battle, not disease. Yet the aftermath brought one serious outbreak. Saipan was free of malaria, and dysentery was adequately controlled. But dengue was endemic when the rainy season arrived, multiplying the opportunities for mosquitoes to breed. The number of cases among American troops—soldiers, sailors, and marines—rose sharply. By 11 August 300 cases had been reported; by 8 September, 3,500. The relative smallness of the island, however, permitted quicker and more effective control measures than General Headquarters, SWPA, had been able to impose on many areas of New Guinea. The 743d Sanitary Company undertook survey and control work in populous districts. Unit commanders were made responsible for eliminating mosquitoes in their own areas. Planes sprayed the island with a 5-percent solution of DDT, a new insecticide then coming into use in combat theaters. The rigorous control program broke the epidemic; new cases fell from a high of 426 on 15 September to only 44 on the thirtieth. But earlier action might have prevented the outbreak entirely.[49]

Overall, Saipan evades neat judgments. A bold, desperate, often confused but ultimately decisive struggle, it compelled the American forces to respond heroically to not only their own shortcomings but also the enemy's

[49]OofSurg, USAFPOA, ETMD, 26 Oct 44, encls. 4 and 5, THU Note Cards, Historians files; Rpt, Capt James A. Rooney, OofSurg, 27th Inf Div, n.d., sub: Report of Medical Inspector—Saipan Operation, pp. 2–4, An A to Rpt, Surg, 27th Inf Div, 1 Aug 44, file 370. Both in HUMEDS, RG 112, NARA.

unexpected strengths. The medical side of the battle fitted the general picture, as the veteran medics endured much, cared for overwhelming numbers of casualties, faced constant danger, and coped with situations that often seemed close to getting out of hand.

The results of the campaign were epochal. The enemy's defense perimeter had been pierced, his fleet had been seriously and permanently damaged by the loss of naval aircraft, and his homeland lay within reach of the new long-range American bombers. Acknowledging a crushing setback, the Japanese government of Hideki Tojo resigned on 18 July, the day the American victory was announced. Meanwhile, the campaign for the Marianas moved on.

Tinian and Guam

Although Tinian's 40 or so square miles was guarded from the sea by rugged cliffs in the south and by a hilly region in the north, most of the island was an undulating grassy plain checkered with fields of sugarcane. The land was perfect for the construction of air bases, of which the Japanese had already built three. The garrison was comparatively small, about 8,300 troops. Assigned to the invasion were the 2d and 4th Marine Divisions, with the 27th Infantry Division in reserve.

With Saipan in their grasp, the Americans proceeded at their leisure to study and soften up its neighbor, only 3.5 miles away. Army artillery joined Navy guns in battering defensive positions, discovered by overflights of reconnaissance planes. On 24 July marine assault forces landed on the narrow rocky beaches of the northwest coast, seemingly the least favorable of the island's three possible landing areas. In consequence, they achieved complete surprise. The marines secured the island in about a week. Except for some artillery units, the 27th Division was not needed.

Several Army medical units originally attached to the 27th Division for the Saipan landing were assigned by the V Amphibious Corps to participate in the conquest of Tinian. Their contributions, however, were limited by a typhoon that stirred up heavy swells on the sea and kept both Marine and Army units, including the 31st Field Hospital, away from the fight. Limited to their own medical personnel, the 2d and 4th Marine Divisions on Tinian were fortunate that a low casualty rate enabled them to care for their own. In the first four days LSTs, with two portable surgical hospitals on board, evacuated about 300 casualties before rising seas prevented further movement by sea. But by that time captured airfields on Tinian made air evacuation possible, and beginning on 28 July, C–47s flew evacuees to Saipan.

Saipan's facilities, strengthened by those medical units that had remained on the island due to the storm, nevertheless provided useful support to the fighting forces. In effect, only first aid had to be done on Tinian. Chief losers from this division of labor were enemy civilians hurt in the action, for the understaffed and undersupplied Navy medical units supporting the marines were unable to aid them properly until the fighting was over. Captured Japanese equipment and supplies satisfied some of their needs, however, and on 9 August a 100-bed Navy facility was dispatched from Saipan expressly for

their care. The buildup of Tinian as a major air base for attacks by very heavy bombers on the Japanese mainland ensured that medical facilities would increase as well, and an Army station hospital of 1,000 beds soon arrived to support the air force units stationed there.[50]

The last phase of FORAGER was the assault on Guam, largest of the Marianas and a possession of the United States since the time of the Spanish-American War. The task of its reconquest fell to General Geiger's III Amphibious Corps, which organized the assault around three division-strength units: the 3d Marine Division, the 1st Marine Provisional Brigade, and the 77th Infantry Division in reserve.

An island of two distinct parts, Guam comprises a high coral plateau in the north, with sharp bluffs falling away to the beaches. The waist of the island, low and swampy, includes the capital of Agana. To the south, a rough and mountainous landscape rises, with peaks 1,000 feet high, but the beaches are more accessible than in the north. Because of the impassable reefs on the eastern shore, landings were planned for the west. Here lies Apra Harbor and Orote Peninsula, with an enemy airfield that formed the first objective of the campaign.

Anticipating strong resistance from the 18,500 defenders, the Americans seared the 34-mile-long island with the most intense bombardment of the Pacific war. On 21 July the marines went ashore. By evening the beaches had been cleared. Soldiers of the 305th and 306th Regimental Combat Teams, 77th Division, landed to take over perimeter defense, while the marines sought to clear the enemy from Orote Peninsula. Five days of severe fighting, marked by fierce enemy counterattacks, secured the region. Now the 3d Marine and 77th Divisions pursued the enemy into the northern part of the island, the soldiers advancing along the eastern shore, the marines in the west. Trackless jungle, insects, rain, and deep mud created a combat environment reminiscent of the Southwest Pacific; the 77th suffered 200 casualties in three days. But the hard-used enemy was beginning to disintegrate, and the Chamorro natives greeted the Americans as liberators. The final drive began on 6 August, with all the major American landing forces as participants. Two days later the soldiers had seized Mount Santa Rosa, the last Japanese stronghold, and on the tenth General Geiger declared Guam secure.[51]

Throughout, Guam was primarily a Navy show, as the loss statistics of marines and soldiers demonstrated. The work of the two medical services reflected this fact. Supporting the 77th Division was its own 302d Medical Battalion, as well as the 95th Portable Surgical Hospital and the 36th Field Hospital. The Army's 289th Station Hospital also arrived while the fighting was in progress but did not set up until the battle was over; the unit provided support mainly for naval garrison forces. By comparison, the marines brought two large hospitals with them, plus the organic medical units that supported their two division-sized forces.

The performance of the Army medical personnel was professional and with-

[50]Whitehill, "Medical Activities in Middle Pacific," block 18d, p. 98, file 314.7; Rpt, 38th Field Hosp, 4 Sep 44, pp. 12–13, file 350.09. Both in HUMEDS, RG 112, NARA. See also "Navy Medical Department at War," 1:278–82, BMSA.

[51]Crowl, *Marianas*, pp. 329, 405, 437.



AID STATION MEDICS CARING FOR 77TH DIVISION TROOPS ON GUAM

out surprises. During the first few days medical units stayed on the beach or close to it. Battalion aid stations were set up along the natural lines of drift to intercept the walking wounded, as close to battalion command posts as possible and often within their defensive perimeters. Collecting platoons landed with the rear elements of the battalion teams, but soon recombined into collecting companies because the combat elements remained coherent during the fighting on Guam. Thus Company A, 302d Medical Battalion, supported the 305th Regimental Combat Team; Company B, 302d Medical Battalion, the 306th Regimental Combat Team; and Company C, 302d Medical Battalion, the 307th Regimental Combat Team. The third echelon—the 302d's clearing company and the 95th Portable Surgical and 36th Field Hospitals—landed on 24 and 25 July. The field hospital went into immediate operation at Agat, and the clearing company and the portable followed the northward advance, keeping 7–8 miles behind the collecting stations. Together, these units handled all emergency surgery cases from the front. In early August two of the three field hospital platoons joined the northward movement. The third platoon remained at Agat as backup, admitting 1,125 casualties, two-thirds of them medical, between the 8 and 14 August (*see Map 9*).[52]

[52]Whitehill, "Medical Activities in Middle Pacific," block 18d, pp. 74–81, file 314.7, HUMEDS, RG 112, NARA; "History of OofSurg, USAFMIDPAC," sec. 2, pp. 81–83, Ms 8–5.6 AA 30/2, CMH; "Navy Medical Department at War," 1:290–94, BMSA.

As at Saipan, reefs delayed the movement of supplies ashore, and both Army and Navy medics labored under shortages of supplies and equipment for the first few days. Evacuation ashore was affected by the slow arrival of vehicles. A variety of technical problems faced the Seabees in moving such large items ashore; once on the beach, however, the difficulties that developed were all too familiar. Supplies were lost by breakage in transit, by pilferage, and by the confusion that resulted from dumping materiel of all sorts on the narrow strips of sand. Looting was a serious problem; supplies were stolen both aboard ship and, on the beach, by those apparently in search of alcohol. Even boxes that had been well constructed and waterproofed were broken open, their contents scattered and, ultimately, soaked by rain. A fifth of the 302d Medical Battalion's cots disappeared, compelling medics to put many of their sick and wounded on the ground. Such heavy items as ward tents, a kitchen range, and a washing machine also vanished. Some losses were inevitable, but on Guam the scale of theft was such as to interfere with the proper functioning of the medical units.[53]

In evacuation, Guam presented fewer problems than Saipan, not because organization was better but because the number of wounded was smaller. Casualties, which totaled only about two-fifths the number at Saipan, reached the clearing station or the hospitals usually thirty to ninety minutes after leaving the aid stations. The beaches were not so heavily crowded with wounded awaiting transport, and the handling of the wounded was more efficient. Seven LSTs had been set aside, two equipped with surgical teams and five to evacuate medical cases. The chief problem in using these large landing craft was the reef; often medical officers preferred routing casualties by amphibious vehicles direct to the transports, rather than sending them via the LSTs. Two transports and two hospital ships received casualties from Guam and subsequently brought them to rear area bases instead of using air evacuation.[54]

Lt. Col. John C. Ivins, MC, the 77th Division surgeon, complained about the lack of a third echelon ashore, that is, an evacuation hospital to receive casualties from the field hospital platoons, provide complex treatment, and transfer evacuees to the ships. The attempt to make do without such a hospital apparently reflected a literal-minded attempt to apply the methods appropriate for atolls to combat on the largest island of the archipelago, greater in area than all the others combined. The field hospital platoons had to follow the troops, provide treatment, receive casualties at the beach, and evacuate as well, "an added burden," said Ivins, "on personnel and transportation that was already overworked."[55]

As the prevalence of medical casualties indicated, sickness also marred the conclusion of this Central Pacific Area campaign. Most of the enemy dead were left unburied; again insect control

[53]Whitehill, "Medical Activities in Middle Pacific," block 18d, pp. 82–83, file 314.7, HUMEDS, RG 112, NARA; Crowl, *Marianas*, pp. 358–59.

[54]Whitehill, "Medical Activities in Middle Pacific," block 18d, pp. 87–89, file 314.7, HUMEDS, RG 112, NARA; "Navy Medical Department at War," 1:294–97, BMSA.

[55]Surg, 77th Inf Div, Quarterly Rpt, Oct–Dec 44, p. 1, THU Note Cards, Historians files, HUMEDS, RG 112, NARA.

details had failed to land with the assault forces. Flies and mosquitoes, already common, multiplied in the disorder that accompanied the fighting, and plagues of dysentery and dengue struck the victorious forces. At one point in October, when the 77th Division was preparing for new operations, its surgeon counted hospital admissions for dengue and fevers of unknown origin at 250 a day. The medics were not exempt; more than half the complement of the 289th Station Hospital fell ill with dengue. Skin diseases were ubiquitous, from a combination of high humidity, excessive sweating, contaminated soil, and lack of laundry and bathing facilities. On this large jungled island, troops of the supposedly healthy Central Pacific experienced conditions that were the norm in the theaters to the south.[56]

Civilian sick were another serious burden to medical personnel. Originally inclined to treat the natives well, the Japanese, as the war drew to a close, had requisitioned their labor on defensive works. Chamorros were forced into camps typified by minimal food, insufficient shelter, and miserable sanitary conditions. Hundreds died; others were ill when liberated. Though internment removed the Guamanians from the battlefields and spared them many wounded, the Navy medical service fell heir to its sick. But here, as at Saipan and Tinian, shipping priorities had prevented early movement of facilities to serve civilians. Medics of the III Amphibious Corps were obliged to scrape together captured Japanese supplies and borrow from the 77th Division and the hospital ships offshore.[57]

Yet Guam, despite the difficulties that arose, was a comparatively easy victory. Total American losses were less than half those at Saipan: some 7,800 casualties, of whom 2,124 were killed in action or died of wounds. Most of the blood was shed by the marines, who lost 6,716 to the Army's 839 and the Navy's 245. Of the Japanese garrison of 18,500, few survived.[58]

Summing up the costs of the bitter and decisive campaign for the Marianas, the Americans counted nearly one-fifth of their total force either dead or wounded—24,518 out of an estimated 128,000 soldiers, sailors, and marines. Of the estimated 53,255 Japanese who had defended the islands, only 2,847 survived as prisoners; the rest, except for a few stragglers hiding in the jungle, had perished. The differences among the three Central Pacific Area campaigns are suggested by the loss ratios of the two forces. On Saipan, 1 American was killed in action to every 8.4 Japanese; on Guam, 1 to every 14.8; and on Tinian, 1 to every 23.8. Overall, the average was almost precisely 1 to 11.[59]

Planning for the campaign had been less than satisfactory, in part because the easy victory in the Marshalls had made the projections of the Joint Staff's Logistics Division and the latter's medical section overly optimistic. Low estimates of casualty rates resulted in hospitals and hospital ships being overloaded, not only at the scene of the fighting but

[56]Ibid., pp. 1–2, THU Note Cards, Historians files; Whitehill, "Medical Activities in Middle Pacific," block 18d, pp. 84–85, file 314.7. Both in HUMEDS, RG 112, NARA. See also "History of OofSurg, USAFMIDPAC," sec. 2, pp. 81–82, Ms 8–5.6 AA 30/2, CMH.

[57]"Navy Medical Department at War," 1:300–06, BMSA.

[58]Crowl, *Marianas*, p. 437.

[59]ASF Monthly Progress Rpt, 31 Jan 45, sec. 7, p. 3, THU Note Cards, Historians files, HUMEDS, RG 112, NARA.

also back through the chain of evacuation as far as the United States. Hardly an aspect of the evacuation story could be cited that did not reveal failures of foresight and unnecessary suffering inflicted on the wounded. The failure to provide insect control units to accompany the landings was apparently a product of the very fact that made the campaign a success. Striking so far to the enemy rear compelled the fleet to carry immense quantities of every kind of supplies, and priorities excluded the units that might have imposed successful preventive medicine from the beginning.

In reviewing accounts of the Marianas campaign, the Army Service Forces headquarters drew the conclusion that each assault division needed one 400-bed evacuation hospital, a mobile field hospital, and two hospital ships; that some mobile medical units should land with the first waves if any possibility existed that enemy action might compel the transports to retire; that sanitary details equipped to cope with flies and mosquitoes should land in the first week of battle; that special provision must be made for large numbers of civilian casualties; and that frontline medical installations, which had been subject to attack throughout the Marianas fighting, needed improved security.

Despite all failings, the epic struggle had carried the American forces beyond the atolls, prepared them for the assault on the Philippines, taught valuable lessons in amphibious warfare, and brought the day of victory measurably closer. By the end of the year the Seventh Air Force headquarters would be established on Saipan and the air assault against Japan would be under way. The Marianas would become a center of military hospitalization, with 16,500 Army beds alone, many times the number on Oahu. As the forces prepared for new battles, the support system as well grew rapidly over the great Pacific distances.[60]

[60]Rpt, Col Robert F. Bradish, CO, 821st Hosp Ctr, Tinian, n.d., sub: Status Notes as of 12 June 1945, THU Note Cards, Historians files; ASF Monthly Progress Rpt, 31 Jan 45, sec. 7, pp. 1–3, THU Note Cards, Historians files; Ltr and 1st End, OofSurg, 7th Air Force, to Surg, PACUSA, 1 Jul 46, and Surg, PACUSA, to CSurg, USAFPAC, 11 Jul 46, encl. 1, p. 2, bound in Surg, 7th Air Force, Annual Rpt, 1946, file 319.1–2. All in HUMEDS, RG 112, NARA. See also "History of OofSurg, USAFMIDPAC," sec. 2, pp. 82–83, 88–100, Ms 8–5.6 AA 30/2, CMH.

CHAPTER VIII

Growth of the Medical System

While the battlefront advanced, an increasingly complex medical organization developed in the Central, South, and Southwest Pacific Areas to support the fighting forces. By mid-1944 base commands, each with a medical complement for its garrison and many with elaborate rear area complexes of general and station hospitals to receive casualties, were the norm. Organization differed between MacArthur's Army-dominated and Nimitz' Navy-run areas. But patterns of evacuation, hospitalization, supply, and preventive medicine also showed broad similarities.

SWPA: Unity Replaces Conflict

During 1943 the buildup of medical personnel in the Southwest Pacific Area was steady, rising from about 13,000 to more than 33,000. Yet the increase of about 254 percent did not quite keep pace with that of the theater as a whole, where Army strength rose from about 118,000 to more than 329,000 in the same period, or about 280 percent. Since the dispersion of forces grew with the campaigns in New Guinea and nearby islands, most units operated below strength throughout the year.[1]

The process of determining appropriate bed strength for the theater underscored the divided state of medical leadership. In early 1943 General Headquarters, SWPA, provided fixed bed strength equal to 9 percent of troop strength. The consensus was that this figure was inadequate. Carroll wanted 11 percent; Rice preferred 12 percent; and Brig. Gen. Charles C. Hillman, MC, of the Office of the Surgeon General, after inspecting conditions in the theater in March 1943, urged 15 percent. On 24 September, however, a War Department radiogram fixed the authorization at 10 percent, with equipment for a 50-percent expansion in case of need and with 400 mobile beds per division. This implied a total of 33,540 fixed beds, with more to follow as the troop buildup continued. Carroll, as the USASOS chief surgeon, intended to put 35 percent of the beds in Australia and 65 percent in New Guinea and nearby islands, reflecting the advance of the front. The basic justification for the array was not battle losses—only 6 to 7.5 percent of the theater's beds were expected to

[1]John H. McMinn and Max Levin, *Personnel in World War II*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963), pp. 350, 354.

be occupied by battle casualties resulting from the planned offensives of 1944. All of the remaining beds would, the chief surgeon estimated, be used by the victims of disease and nonbattle injuries.[2]

The commitment of beds meant provision of adequate medical personnel to staff them. In fact, however, medical strength in the Southwest Pacific Area followed a variable course. While combat forces increased to more than 700,000 during 1944, medical personnel grew to only 62,000 by the end of the year, never reaching the authorized goal of 10 percent of command strength. By mid-1944 medical strength had briefly attained at least numerical parity to the number of medical personnel available in the European theater—9 percent—but thereafter gradually declined, shrinking to 7.9 percent of troop strength by the end of the war.[3]

The surgeon general's intervention in the matter of bed strength reflected his long-standing dissatisfaction with the medical setup in the Southwest Pacific Area. MacArthur's medical organization, faced with its endemic problems of distance and dispersion, could ill afford the conflict that had developed between Carroll and Rice.[4] As complaints from medical officers reached Washington, Surgeon General Kirk deemed it necessary in mid-1943 to dispatch investigators to General Headquarters, SWPA, to uncover the true situation.

One investigator, Colonel Wilson, who was chief of the Hospitalization and Evacuation Branch, Plans Division, Army Service Forces (ASF), assessed the problem to be a lack of centralized direction. Many of the officers he interviewed concurred on the need for a chief surgeon who had excellent previous training, good judgment, and unbounded energy. During the same period Brig. Gen. Hugh J. Morgan, MC, chief of Medical Services, Office of the Surgeon General, saw and reported that disorganization at the top was directly affecting frontline service to the troops. "The closer one approaches the fighting front," he wrote, "the more urgent become the administration [*sic*] and professional problems of the Medical Department." Indeed, its "poorly organized and poorly operated medical services in the Advanced Areas" constituted "Medical Department failure."[5]

Opportunity beckoned that December, when General Carroll, physically exhausted by his extended tour, returned to the United States to become commanding officer of Vaughan General Hospital in Hines, Illinois. In

[2]CSurg, USASOS, SWPA, Annual Rpt, 1943, pp. 35–41, 45, file 319.1–2, Historical Unit Medical Detachment (HUMEDS), Record Group (RG) 112, National Archives and Records Administration (NARA), Washington, D.C. Part of Carroll's rationale for the 11-percent figure arose from geography. Units were so subdivided that mobile medical support, as determined by T/O&E, was inadequate and had to be supplemented with fixed beds, which depleted the theater's holding capacity.

[3]On the problems of the expansion, see ibid., 1944, pp. 1–7, 151–67, file 319.1–2, HUMEDS, RG 112, NARA; McMinn and Levin, *Personnel*, pp. 368–70.

[4]See Chapter II on the early controversy between Carroll and Rice.

[5]Memo, Col William L. Wilson to Gen Kirk, 20 Oct 43, sub: [Observations and Facts Obtained During Visit to SWPA], pp. 1–10, file 333 (Visit of Col Wilson to SWPA) 1943; Memo, Wilson to Ex Off, [OSG], 1 Nov 43, sub: Visit to Southwest Pacific Area, p. 1, file 333 (Visit of [Col Wilson] to SWPA) 1943; Comments and Recommendations, Medical Department, USAFFE, pp. 1 (quotations), 2–3, attached to Exh 1 of Ltr, Brig Gen Hugh J. Morgan, OofSurg, USAFFE, to Brig. Gen. Percy J. Carroll, CSurg, USAFFE, 12 Aug 43, file 333 (Brig Gen Hugh J. Morgan) SWPA. All in HUMEDS, RG 112, NARA.

January 1944, as a consequence of Morgan's and Wilson's reports, central control of medical activities was partially achieved when General Denit, the energetic surgeon of the Atlantic Base Section in North Africa, became simultaneously Chief Surgeon, USAFFE, and Chief Surgeon, USASOS. This eliminated one source of confusion by allowing Denit to supervise all aspects of Army medicine, except in the task forces. But another remained.[6]

Surgeon General Kirk offered to have Rice relieved also, but Denit, to his later regret, opposed the move, believing that Rice, an old friend, "could be utilized." In time, however, he came to agree with Carroll's estimate of the headquarters surgeon as a marplot, whose chief function was to interfere. Relying upon past friendship to establish a "most harmonious and helpful relationship," the new chief surgeon soon realized that he had "made a serious mistake by saying . . . [Rice] should not be brought home at the same time with Carroll." According to Denit, Rice still advised the supreme commander as he saw fit while evading the responsibility for practical problems that had to be met and for operations that went awry. "[Rice's] status as G.H.Q. surgeon which he claims to have an order for places me in a very anomalous position," Denit complained. "There is still confusion in the minds of the Sixth Army, & the Fifth Air Force."[7]

Nevertheless, Rice continued to regard himself as the true theater chief surgeon until September 1944, when he was appointed surgeon of the newly established Eighth Army. Following his reassignment, the title of Surgeon, General Headquarters, SWPA, was terminated. As the war entered its last year, the theater medical service achieved at last a measure of the unity it had long needed.

One area still remained, however, where the chief surgeon's voice was heard dimly, if at all: the task forces. By the end of the war Denit had begun to sound much like his predecessor, Carroll, on this subject. In each task force the commander determined his own medical needs, often, in Denit's opinion, setting them too low in order to make space for line units and their equipment. "I *sometimes* got a chance to review and comment," Denit noted, "but no amount of pleading could change things if the CG, task forces, ruled otherwise." The medics faced other problems, apparently related to the chief surgeon's standing, or lack of it, in the headquarters pecking order. Engineer units seemed to have no time to build hospitals. The chief signal officer, who had served with MacArthur on Corregidor, enjoyed direct access to the Supreme Commander and as a result, in the embattled enclave or forward base, local signalers took the high ground and ruled hospitals out of the neighbor-

[6]Interv, [Maj] Gen Guy B. Denit, 1 Mar 50, file 000.71, HUMEDS, RG 112, NARA; Interv, Mary Ellen Condon-Rall with Percy J. Carroll, 26 Sep 80, U.S. Army Center of Military History (CMH), Washington, D.C.

[7]First quotation from Interv, Denit, 1 Mar 50, p. 1, file 000.71; remaining quotations from Memo (handwritten), [Denit], n.d., pp. 3 and 1–2, file 320 (Organization of Medical Service) SWPA 1944. Both in HUMEDS, RG 112, NARA. In loc. cit., see also Ltrs, Col George W. Rice to Col John A. Rogers, 31 Jan 43, and Maj Gen Norman T. Kirk to Rice, 2 Nov 43, file 201 Correspondence, Col George W. Rice, 1942–1944. For further details on the organization of the SWPA medical service, see Blanche B. Armfield, *Organization and Administration in World War II*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963), pp. 407–50.

hood, complaining that X-ray machines caused interference. "Hence the *frog ponds* for hospital areas."[8]

The Bases Advance

Despite such frictions the chief surgeon had gained new authority and prestige, and needed both during 1944 to meet the complications of a changing theater. The theater abandoned much of its Australian base, with its widely scattered garrison forces. Planned complex operations and medical personnel shortages alike dictated fewer and larger hospital units, with consequently greater reliance upon an improved transportation network. Eventually, small station hospitals were inactivated, their personnel absorbed by large general hospitals, which in turn were organized into hospital centers.

Meanwhile, new bases in western New Guinea burgeoned. In November 1943, to administer the bases and to handle the movement of supplies and personnel to the forward area, the USASOS established the Intermediate Section, headquartered first at Base D (Port Moresby) and then at Base B (Oro Bay) on the north coast. A new Advance Section, located at Lae and then at Finschhafen in January 1944, controlled the medical activities of Bases E (Lae) and F (Finschhafen). In March the Advance Section was disbanded and its responsibilities absorbed by the Intermediate Section. In preparation for the coming invasion of the Philippines, Base G was established at Hollandia in June, at first directly under the USASOS but two weeks later under the Intermediate Section. At this juncture, the Intermediate Section became the USASOS's principal command post and the chief surgeon's main base, though a rear section remained in Australia until November. With the Sixth Army tagged for the invasion, the USASOS created another new organization, the Army Service Command, in July to provide direct support.[9]

Far to the rear, the old Australian bases were consolidated, reduced to caretaker status, or closed down. A new USASOS base section was created at Brisbane in June 1944, specifically to handle the complicated process. Supply depots departed, and the 4th General Hospital moved to Finschhafen, having restored its 1,000-bed facility to the Australian people, who had given it to the Americans in 1942. Signs of the times were transfers of soldier patients to U.S. Navy or to Australian hospitals. At the Army hospitals that remained in the Australian base sections the main medical problem was venereal disease, reflecting the concentration in towns and cities of troops once isolated in remote areas. But the advent of penicillin in the Pacific in November 1943 soon helped to make this old military affliction far less important than before.

The base sections too began to disappear, not only because the tide of battle had moved north but because casualties of the New Guinea fighting increasingly were evacuated directly to the United

[8]Denit comments quoted by Ashley W. Oughterson, "From Auckland to Tokyo," in B. Noland Carter, ed., *Activities of Surgical Consultants*, Medical Department, United States Army in World War II, 2 vols. (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1962–64), 2:770.

[9]CSurg, USASOS, SWPA, Annual Rpt, 1944, pp. 1–3, HUMEDS, RG 112, NARA; Armfield, *Organization and Administration*, pp. 412, 434–35. For more on the Army Service Command, see Chapter X.

States. Base Section 1 at Darwin closed, and its troops departed gladly from a place of tedious routine and tropical heat. Base Section 3 at Brisbane was changed and downgraded as well. It had been the home of both the USASOS headquarters and the Malaria Control School; the theater's main distribution center for medical supplies; and, because of its seven hospitals and 4,000 beds used by evacuees from New Guinea, an important center of evacuation to the United States. But as the medical units followed the troops throughout 1944, along with the headquarters, the Malaria School was lost to the Intermediate Section. In June Section 3 was renamed Base Section USASOS Brisbane, with control over the remaining base sections, and in February 1945 redesignated the Australian Base Section, emphasizing the fact that this large and once-active organization had become a rear area.[10]

Even in New Guinea the southern and eastern bases declined. Port Moresby passed its peak in 1943, losing its four station hospitals and turning over American sick and wounded to Australian facilities. In mid-1944 Base A (Milne Bay) peaked and then rapidly lost its importance; the 4,208 occupied beds of June fell to 1,775 in December. As the base declined to a supporting status during 1945, a single general hospital met all the needs that six station and three large general hospitals had served a year before. Base B (Oro Bay) also began to shrink during the second quarter of 1944. Air activity moved away from Lae, once the objective of a hard-fought campaign; however, neighboring Finschhafen, strategically located on the tip of the Huon Peninsula, remained a major base. Meanwhile, the western bases grew rapidly, notably G (Hollandia) and H (Biak); they mushroomed into immense centers of supply, with port facilities and staging areas. By the end of 1944 more than 280,000 troops were concentrated in the last three. In February 1945, as USASOS bases built up in the Philippines, the New Guinea bases came under the newly established New Guinea Base Section that replaced the Intermediate Section at Oro Bay.[11]

Such rapid growth, especially in the disease environment of New Guinea, meant serious problems for the medics. The first six months of 1944 at Finschhafen, for example, were marked by repeated outbreaks of dengue and malaria, which in the end were suppressed apparently as much by the return of the dry season as by the imposition of rigorous control measures. The effectiveness of strict Atabrine discipline and efforts to destroy mosquitoes, however, became evident later in the year, for both diseases were reduced to manageable problems. At Oro Bay the base commander offered a prize in war bonds to the unit that killed the most rats; units offered their own prizes, the winner in the 25th Ordnance Medium

[10]See Quarterly Rpts, Oct–Dec 43, pp. 1, 6, and Jan–Mar 44, p. 1, for Surg, Base 1; respectively, p. 1, and p. 1, for Surg, Base 3; and pp. 10–12, and p. 5, for Surg, Base 4 (copies); plus Oct–Dec 44, pp.1–2, and Jan–Mar 45, pp. 1–2, for Surg, Base 2 (copies), and p. 1, and p. 1, for Surg, Base 7 (copies). All file 319.1, HUMEDS, RG 112, NARA. See also Diary (Extract), Australian Base Sec, 15 Feb 45, file 323, HUMEDS, RG 112, NARA, and Armfield, *Organization and Administration*, pp. 476–77.

[11]See "USASOS Bases in New Guinea," pp. 41–42, Historians files, and Quarterly Rpts (copies), 1944 and Jan–Jun 45, for Surgs, Base D [Port Moresby], Base B [Oro Bay], and Base E [Lae], file 319.1. All in HUMEDS, RG 112, NARA.

Maintenance Company receiving a chocolate cake. Presumably no commander, at this stage of the war, doubted any longer that medical discipline was essential and that the health of the base was a command responsibility.[12]

As was customary in the Pacific, a long supply line, materiel shortages, and incessant rains combined to slow all construction, including that of hospitals. As usual, medical personnel were obliged to do most of their own construction work, in default of assistance from the overburdened engineers, whose first priority was airfields. Denit was scornful of Australian prefabricated hospitals, which he called "Australian cowsheds," but admitted that "they served their purpose, and as they had to be abandoned quickly as the front moved, better construction would have been unwarranted." In any case, theater priorities left American-made prefabricated hospital assemblies stranded on the docks and in the warehouses of United States port cities.[13]

The basic cause of shortages, both of medical personnel and materiel, was the course of the war, then surging toward its climax in several widely separated theaters. The end of 1944 and the opening of 1945 saw climactic battles in the Pacific and in Europe, and the strain on American resources in both troops and supplies was heavy. As early as August Surgeon General Kirk had expressed his concern to Denit: "I don't see . . . how your Theater can do a good job—although maybe it can—until V–Day comes in Europe," warning that "there won't be enough in the States to meet both requirements." Then as the Battle of the Bulge raged in Europe, he again wrote the chief surgeon, reporting that "we are out of hospital units. We have had a hell of a drain on us from the U.K."[14]

One result was to turn medical personnel at new bases into construction laborers, just as their predecessors had been when the war was new. At Finschhafen as throughout New Guinea, professors of surgery operated concrete mixers and bulldozers, enlisted medics hammered and sawed, and mosquito control units spent their days at carpentry rather than fighting malaria. By the end of March, with the epidemics in full swing, the base had only 1,630 hospital beds for 90,000 troops—1 bed for every 55 men and 9 out of every 10 beds occupied! But by the end of June three general, five station, and two field hospitals were in operation, and bed strength had risen to about 7 percent of the command. The units were housed in prefabricated buildings, most of Australian manufacture, with tented expansion wards and generously equipped with cola machines and ice cream freezers. Many were surrounded by beds of tropical flowers in settings framed by New Guinea's extraordinary natural beauty.[15]

[12]See Surg, Base B [Oro Bay], Quarterly Rpts (copies), 1944, file 319.1, HUMEDS, RG 112, NARA.

[13]Interv, Denit, 1 Mar 50, p. 3, file 000.71, HUMEDS, RG 112, NARA.

[14]Ltr (copy), Maj Gen Norman T. Kirk, SG, to Brig Gen Guy B. Denit, CSurg, USASOS, 28 Aug 44, p. 2 (first two quotations); ibid., 19 Dec 44, pp. 1–2 (third quotation); Ltr (copy), Col Arthur B. Walsh, Dir, Plans Div, OSG, to Denit, 23 Dec 44, p. 2. All in file 200 Kirk-Denit Correspondence, HUMEDS, RG 112, NARA. On construction problems in the Southwest Pacific, see Karl C. Dod, *The Corps of Engineers: The War Against Japan*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, United States Army, 1966), pp. 548–51.

[15]Surg, Base F [Finschhafen], Quarterly Rpts (copies), Jan–Mar 44, p. 5, and Apr–Jun 44, pp. 6–7, file 319.1, HUMEDS, RG 112, NARA.



PREFABRICATED BUILDINGS IN NEW GUINEA, *used as a base dispensary, dental clinic, and medical ward*



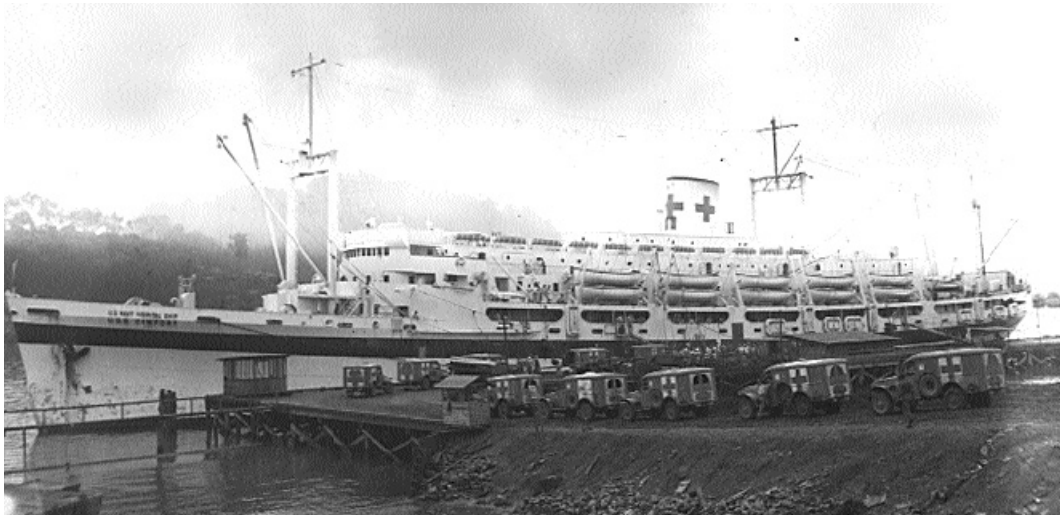
Late in 1944 a new organization came to Finschhafen, the 26th Hospital Center, created around the nucleus of the 4th General Hospital, lately at Melbourne. Combining three or more 1,000-bed general hospitals, the center unified administration, enhanced specialization in its component organizations, and economized on medical personnel. Improved efficiency was necessary; the patient census in Finschhafen reached 7,122 in October, with few beds to spare. Though that apparently represented the peak, casualties from the new battlefields to the west continued to flow into Finschhafen during late 1944 and the first half of 1945. Planes delivered them to the airfields nearby, and ships converted into seagoing hospitals docked and discharged their loads onto sea ambulances, high-powered launches that ferried them to shore. From Finschhafen, casualties were evacuated to Australia until May, but thereafter directly to the United States.[16]

The base at Hollandia in western New Guinea was set up in mid-1944 primarily to prepare and support future operations in the Philippines. Base surgeon Lt. Col. Everett King, MC, landed in May with a small party to select hospital sites, finding only the 36th Evacuation Hospital, the 24th Medical Battalion of the 24th Infantry Division, and the 9th Portable Surgical Hospital at work in the area. By 30 June King had developed plans for the proposed 27th Hospital Center to include four general, two station, and one field hospital—an aggregate of 3,650 beds. Actual expansion came more slowly than King had forecast but in the end was greater; for the stream of casualties from the Philippine campaign, some 8,930 beds were available by the end of 1944 and a total of 9,502 by the spring of 1945. Medical personnel built the Army's largest overseas facility, the 54th General Hospital, with 3,500 beds—cutting trees, leveling the ground, mixing cement, and putting up the "prefabs," until a miniature city had appeared in place of tropical jungle.[17]

Casualties were brought to the 27th Hospital Center via LSTs, hospital ships, and transports. Ambulance boats scurried between the ships in the bay and the docks, bringing in new ones and carrying those in need of long-term care to the hospital ships for transport farther to the rear. The theater, having previously only two hospital ships, as of late 1944 boasted seven, with a total capacity of 3,675 beds. The four more elaborate hospital ships, which were both operated and staffed by the Navy, were intended to serve as large floating hospitals, where definitive work was accomplished, and to appear as a luxurious means of transporting the wounded to further treatment ashore; they also functioned as mobile outpatient departments and mobile medical supply depots. The three less elaborate hospital ships—the USS *Mercy*, USS *Hope*, and USS *Comfort*—were built, commanded, and crewed by the Navy for the Army and were staffed by Army medical personnel. All seven joined SWPA's growing fleet, consisting of several distinct types

[16]Ibid., Oct–Dec 44, p. 2, Jan–Mar 45, p. 2, and Apr–Jun 45, p. 2, file 319.1; CSurg, USASOS, SWPA, Annual Rpt, 1944, pp. 88–93, file 319.1–2; Ltrs (copies), Kirk to Denit, 7 Oct 44, p. 1, and 25 Oct 44, p. 2, file 200 Kirk-Denit Correspondence. All in HUMEDS, RG 112, NARA.

[17]Surg, Base G [Hollandia], Quarterly Rpts (copies), Apr–Jun 44, p. 4, Jul–Sep 44, pp. 1–3, Oct–Dec 44, pp. 3–4, and Jan–Mar 45, pp. 3–5; 27th Hosp Center Quarterly Rpt, Jan–Mar 45, pp. 2–7. All file 319.1, HUMEDS, RG 112, NARA.

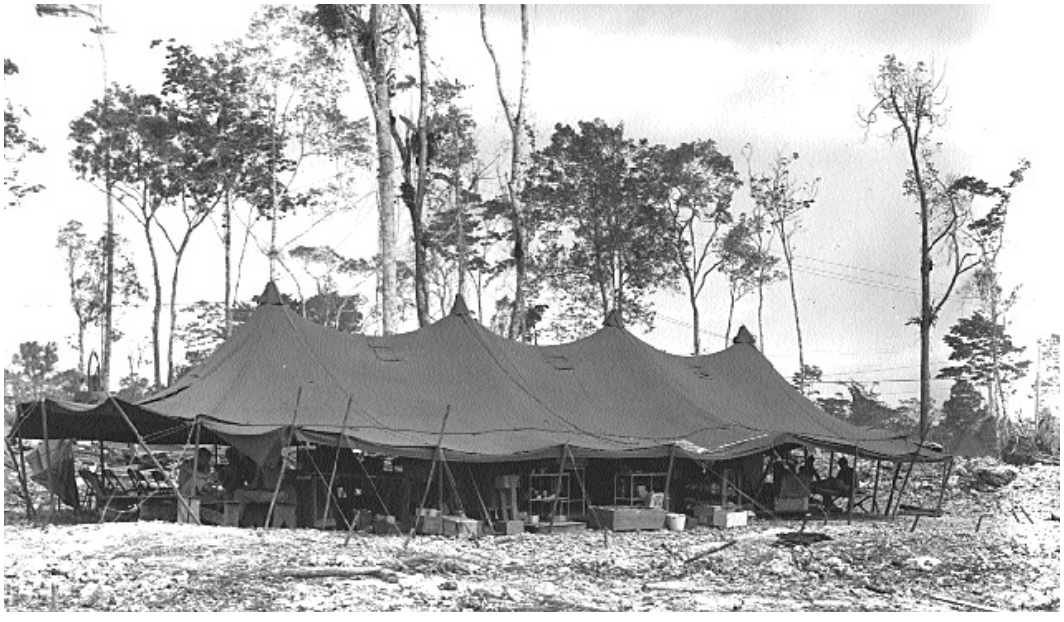


THE USS *COMFORT* ARRIVES AT HOLLANDIA

of seagoing craft. The Army itself obtained a fleet of twenty-six converted transports, with civilian crews provided by the Transportation Corps and medical staffs by the Office of the Surgeon General. Finally, every attack transport, even if it was not designated a hospital ship, by regulation had a small hospital aboard, with bed strength equal to 3–5 percent of troop berths. Hospital ships, whether Navy or Army, usually abided by Geneva regulations. They were painted white, with a broad green stripe and red crosses; were registered with the enemy; were subject to search by the enemy for contraband of war; and sailed brilliantly lighted at night. The troop transports were camouflaged, blacked out at night, and were subject to attack by enemy aircraft or submarines.[18]

Evacuation policy changed in 1944 as direct flights from New Guinea to the United States became more common. In contrast to the limited scale of the previous year, air evacuation rapidly increased in response to the worldwide expansion of transoceanic flights by the Air Transport Command. In the Southwest Pacific Area the seriously sick and wounded passed through the Air Transport Command's Southwest Pacific Wing headquarters, first at Lae and then on Biak, on their way home. Prior to November medical disposition boards, which met at general hospitals, were responsible for examining and selecting casualties for evacuation to the United States. Thereafter, commanders of base sections that had general

[18]On hospital ships, see CSurg, USASOS, SWPA, Annual Rpt, 1943, pp. 5, 59; Clarence McKittrick Smith, *The Medical Department: Hospitalization and Evacuation, Zone of Interior*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1956), pp. 394–425; H. F. Fultz, "Forest Fires, Lightning, and the Moon," *U.S. Navy Medicine* 75 (Jul/Aug 84): 9–18; "History of USS Comfort (AH 6)," file USS Comfort, Bureau of Medicine and Surgery Archives, Washington, D.C.; Melville J. Aston and Richard A. Kern, "The Wartime Log of a United States Navy Hospital Ship to 30 June 1943," *U.S. Navy Medical Bulletin* 46 (Nov 46): 1640.



PORT DISPENSARY TENT ON BIAK ISLAND

hospitals issued the necessary movement orders.[19]

The last of the big New Guinea bases opened on Biak Island in August 1944, with Col. August W. Splitter, MC, as base surgeon. The small field medical establishment grew rapidly to accommodate the 51,000 troops crowding the island, where their predecessors had struggled against the fortified caves of the Japanese. Again, the Philippine campaign provided the major stimulus for growth; bed strength rose from about 1,000 at the end of September to 4,750 by the end of the year and to almost 8,900 in March 1945. The three general hospitals on Biak were organized as the 28th Hospital Center; a station hospital on nearby Owi Island provided additional strength. The major difference from Hollandia and Finschhafen was the fact that evacuation was almost entirely by air from an island whose harbor was small and whose airfields were large. On 23 November 1944 C–54s began to carry evacuees directly to the United States, via Guadalcanal, Canton Island, and Honolulu (*see Map 10*). Only when additional shipping became available following the end of the war in Europe did water transport, reversing the usual order of things in the Pacific, replace the planes of the Southwest Pacific Wing, whose headquarters by

[19]Surg, Base G [Hollandia], Quarterly Rpts (copies), Apr–Jun 44, pp. 4–5, Oct–Dec 44, pp. 4–5, Jan–Mar 45, pp. 3–6, and Apr–Jun 45, pp. 11–12, file 319.1; CSurg, USASOS, SWPA, Annual Rpt, 1943, p. 53, file 319.1–2. All in HUMEDS, RG 112, NARA. See also Sheldon R. Uday, "The Army's Largest Hospital Overseas," in Philip A. Schaefer, ed., *54th in Review: A Resume of the Activities of the 54th General Hospital, 1943–1945* (Tokyo: Dai Nippon Printing Co., 1946); Robert F. Futrell, "Development of Aeromedical Evacuation in the USAF, 1909–1960," USAF Historical Studies No. 23 (Maxwell Air Force Base, Ala.: USAF Historical Division, Air University, 1960), p. 357, copy in CMH.



NEW CONCRETE FLOOR IN A STATION HOSPITAL WARD

then had moved on from the hot coral island in Geelvink Bay.[20]

Overall, the conclusion can hardly be escaped that the price of the great advance of the bases during 1944, and the care simultaneously provided to tens of thousands of casualties, continued to be paid by medical personnel whose numbers, though constantly increasing, were never large enough to do all that was demanded of them. As Surgeon General Kirk wrote Denit in November 1944, "I don't know how in hell we are going to be able to carry on this two-ocean war with the doctors and nurses we have." Not occasionally but habitually they were required to be their own engineers while caring for the sick and injured. "To understand the injustice placed upon hospital personnel (indirectly the patients) who are required to establish their own hospitals," wrote a team of medical inspectors, "one need but see the various medical specialists . . . with their trained professional technicians pouring concrete, digging drainage ditches, building mess halls and operating rooms, assembling and installing heavy equipment—in shifts because at the same time they must accept and treat patients."[21]

[20]Surg, Base H [Biak], Quarterly Rpts (copies), Jul–Sep 44, pp. 1–5, Oct–Dec 44, pp. 7–8, Jan–Mar 45, pp. 2, 7–9, and Apr–Jun 45, pp. 8–9, file 319.1, HUMEDS, RG 112, NARA.

[21]Ltr (copy), Kirk to Denit, 24 Nov 44, p. 1 (first quotation), file 200 Kirk-Denit Correspondence; Rpt, Training Div, OSG, [19 Sep 45], sub: Survey of Effectiveness of ASF Trained Medical Department Units and Personnel in SWPA and POA, p. 2 (remaining quotations), Historians files. Both in HUMEDS, RG 112, NARA. On the experiences of U.S. Army hospitals, see copy of Extracts From Historical Reports [Relating to] Construction, Hospital Structures, and Utilities, Jan–Mar 44 entries, Historians files, HUMEDS, RG 112, NARA.


PACIFIC OCEAN
Morotai I
Halmahera I
MOLUCCAS
Ceram I
Sansapor
Manokwari
VOGELKOP
PENINSULA
Geelvink
Bay
Biak I
Noemfoor I
Base H and
28th Hospital Center
Sarmi
Hollandia
Wadke I
to U.S. via Ca
NETHERLANDS EAST INDIES
Aroe Is
Tanimbar Is
ARAFURA SEA

MAP 10


NEW GUINEA BASES
December 1944
Sea evacuation
Air evacuation
ELEVATION IN METERS
0
500
2000
4000 and Above
0
300
Miles
anton or Guadalcanal
Base G and
Hospital Center
Admiralty Is
NEW IRELAND
Rabaul
BISMARCK
SEA
Aitape
Wewak
NORTHEAST
NEW GUINEA
Madang
Saidor
Finschhafen
Arawe
NEW BRITAIN
Base F and
26th Hospital Center
Lae
Base E
Salamaua
Wau
Base B and
Intermediate Section Headquarters
UINEA
PAPUA
Base C
Kiriwina I
Oro Bay
Buna
Goodenough I
Woodlark I
Base D
Port Moresby
Milne Bay
Base A
AUSTRALIA
CORAL SEA

Persistent Problems

The net effect of all these changes was to shift most of the Southwest Pacific Area's support structure, as well as its combat forces, into the tropical disease zone. The theater's limited but real success in controlling malaria did not, unfortunately, imply a similar success against other medical problems of tropical warfare. The handling of at least two others—neuropsychiatric (NP) conditions and scrub typhus—reflected enduring shortcomings in theater medical organization and policy.

For reasons that went deep into contemporary medical beliefs and assumptions, neuropsychiatric casualties—the nation's leading cause of nonbattle disability separations—might almost be called the definitive American military medical problem of World War II. MacArthur's command had the worst record of any theater in handling NPs. During 1944 problems defined as psychiatric accounted for almost 33 percent of all evacuations to the United States; intratheater evacuations also were heavy. The reasons were depressingly familiar—jungle warfare, the tropical environment, the conviction of many GIs that they would never see home until the war ended. The number of evacuees swelled because commanders used medical channels to eliminate their undesirables. In addition, doctors who lacked psychiatric training misdiagnosed NP disorders and, like the commanders, dispatched puzzling or incomprehensible cases to the rear.[22]

In the face of many difficulties, General Headquarters, SWPA, had a mixed record in prevention and treatment during 1944. Beginning in February, a series of memos and circular letters educated the average medical officer in his responsibilities and the nature of the problem, especially in properly diagnosing minor NP disorders. Nurses and enlisted medics learned their own jobs through lectures and by working with psychiatrists. Each psychiatrist trained two or three assistants by the ancient medical practice of apprenticeship. In hospitalization, however, the consolidation of hospitals caused the command to backslide; station hospitals designated to treat NPs during 1943 were merged into general hospitals, where the emphasis of medical disposition boards on evacuation caused the cure rate for minor cases to plummet from 85 to 25 percent. Not until 1945 would dedicated psychiatric hospitals reappear, and the cure rate return to or exceed the levels of late 1943.[23]

In the field, on the other hand, division psychiatrists increased in number, and the practice of holding cases well forward continued to spread in irregular fashion, depending on the outlook of unit commanders and the influence and sophistication of the local surgeon and psychiatrist. The patient with mild to moderate stress reactions was likely to recover, provided he was not sent to the general hospitals and selected for evacu-

[22]Frank A. Reister, *Medical Statistics in World War II*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1975), pp. 34, 44. The underlying causes of the failures of American military medicine in this respect are knowledgeably discussed by Albert J. Glass, "Psychosomatic Medicine," in W. Paul Havens, Jr., ed., *Infectious Diseases and General Medicine*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1968), pp. 675–712.

[23]See CSurg, USASOS, SWPA, Annual Rpts, 1944 and 1945, file 319.1–2, HUMEDS, RG 112, NARA.

ation out of theater. Once on that treadmill, he was lost to duty and dispatched on crowded vessels, whose holding capacity for such cases was never adequate (neuropsychiatric cases lacked the priority for air travel until 1945). Yet better days for the theater lay just ahead. In January 1945, a period of intense fighting when stress and danger were acute, the rate for all psychoneuroses dropped from about 26 per 1,000 troops to 8.3 and for psychoses from 17.3 to 5.7. Growing comprehension among doctors, reinstitution of dedicated hospitals, and pressure on commanders to cease disposing of disciplinary problems through medical channels all contributed to a further decline that continued until the end of the war.[24]

Assistance from experts in the United States played an important role in reducing to manageable proportions another enduring problem of quite a different sort—scrub typhus. This formidable illness first appeared in American troops in the form of isolated cases reported in northern Australia and the Port Moresby area of New Guinea during 1942. Related both to louse-borne epidemic typhus and to Rocky Mountain spotted fever, scrub typhus was better known to Japanese physicians, who called it tsutsugamushi fever, than to Americans. Hundreds of cases developed among Australians fighting along the Kokoda Trail; mortality among those afflicted varied greatly, reaching almost 10 percent in some areas. As Americans began fighting north of the Owen Stanleys they too fell ill, and cases reaching Port Moresby at first baffled doctors. The number of cases among soldiers in the Southwest Pacific Area rose from 935 in 1943 to 4,396 in 1944 and to 5,663 in 1945. The illness was more widespread than anyone had imagined before the war; the fact that armies now were living and fighting in some of the most remote and least known regions of the Earth served to reveal both its extent and its dangers. The death rate, though 4 percent overall, was far higher in some cases, reaching 25 percent in one virulent outbreak (among Army hospital personnel, ironically) on Goodenough Island. The long period of nursing required was a serious cause of ineffectiveness, not only among the victims of the disease but also among the troops in forward areas, who sometimes had to be detailed to help care for them.[25]

In the summer of 1943 the United States of America Typhus Commission had sent a team to New Guinea to study scrub typhus. Its leader was Dr. Francis G. Blake, dean of medicine at Yale University. Blake and his colleagues knew from prewar Japanese studies that the illness was spread by the larva of a mite—in common language, by a red bug that burrowed into the skin. Unlike epidemic typhus, tsutsugamushi fever

[24]CSurg, USAFWESPAC, Annual Rpt, 1945, pt. 1, pp. 93–94, file 319.1–2; Ltr (copy), Capt Charles E. Test, MC, 126th Sta Hosp, 7 Oct 44, sub: War Neuroses, pp. 1–9, Encl to Ltr (copy), Denit to Kirk, 24 Oct 44, file 200 Kirk-Denit Correspondence. All in HUMEDS, RG 112, NARA. See also S. Alan Challman and Henry A. Davidson, "Southwest Pacific Area," in Albert J. Glass, ed., *Overseas Theaters*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1973), 536–41. It should be noted that in the military medical parlance of the time a psychosis simply meant a psychiatric condition with severe symptoms that proved impossible to alleviate.

[25]Chris J. D. Zarafonetis and Myles P. Baker, "Scrub Typhus," in W. Paul Havens, Jr., ed., *Infectious Diseases*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963), pp. 112–15.

spread only from mite to man and not from man to man. The disease killed, however, in the same manner as louse-borne typhus, by causing many small hemorrhages throughout the body, including the heart muscle and the brain. No drug then known combated it. Penicillin was useless, and DDT, the other miracle compound put into common use during the war, proved ineffective against the mites.[26]

The need was for a careful systematic program of prevention, based upon knowledge of the vector. The Typhus Commission had identified the vector as a group of trombiculid mites living on field mice in the kunai grass that typified many regions of New Guinea. (Later evidence showed that grass and ferns might also shelter these and other rodents on which the mites lived—as happened during the outbreaks on Biak and Sansapor.) Americans began to experiment with dipping clothes in a miticide. Parallel efforts to develop a miticide were already under way by the Australian Army, acting for the Combined Advisory Committee at SWPA headquarters. In November 1943 the committee accepted the Australian findings that two chemicals, dibutyl and dimethyl phthalate, were most effective for impregnating the clothing of troops who must go into areas where the scrub typhus was known or suspected to exist.

But a systematic program of prevention was delayed. In 1944 General Denit accepted the value of the miticide as proven, while Colonel Hagins, the Sixth Army surgeon, required a number of field tests before agreeing. The impregnated clothing caused skin problems, stiffened the cloth so as to cause chafing,



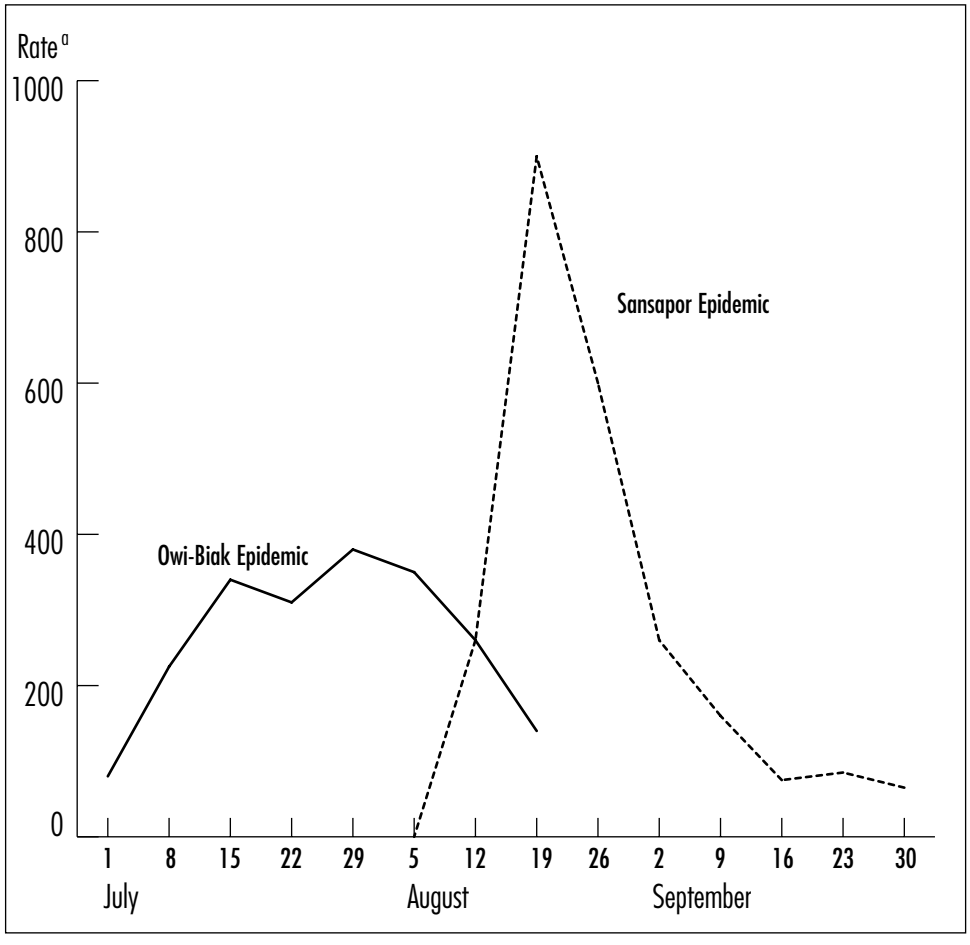
TYPHUS COMMISSION ENTOMOLOGIST GATHERING MITES

and reduced the evaporation of sweat. As already noted, the Combined Advisory Committee did not function properly in this case; its members, uneasy over their anomalous position, deferred to the field commanders instead of seeking MacArthur's approval for a ruling that embodied their own and Denit's views. The result was to delay adoption of a standard method until after two major outbreaks had occurred in American forces, during July and August (*Chart 3*). As Colonel Pincoffs of the committee later remarked, "A committee is not usually as effective an executive agency as an individual."[27]

[26]Ibid., pp. 116–17.

[27]Maurice C. Pincoffs, "History of Preventive Medicine, SWPA," pp. 14–15, Maurice C. Pincoffs Papers, Medical Unit Historical Collection, U.S. Army Military History Institute (MHI), Carlisle Barracks, Pennsylvania.

CHART 3—SCRUB TYPHUS ADMISSION RATE FOR U.S. ARMY FORCES, NEW GUINEA, JULY–SEPTEMBER 1944



[a]Reflects the number of cases per annum per 1,000 troops.

Source: Adapted from Cornelius B. Philip, "Scrub Typhus and Scrub Itch," in Ebbe Curtis Hoff, ed., *Communicable Diseases: Arthropodborne Diseases Other Than Malaria*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1964), p. 288.

Supply and Personnel

Throughout 1944 medical support for every type of casualty suffered from the slow and complicated supply procedures that prevailed within the theater. Col. Alfonso M. Libasci, MC, the chief medical supply officer, remained responsible for an unending headache caused by distance, weather, deficient shipping, a burgeoning troop basis, theater bureaucracy, and a variety of other factors. During the year he spent hundreds of hours in air travel, investigating

the situation at the widely scattered bases, developing a new stock control system, and supervising a buildup of depots and the depot companies that served and maintained them.

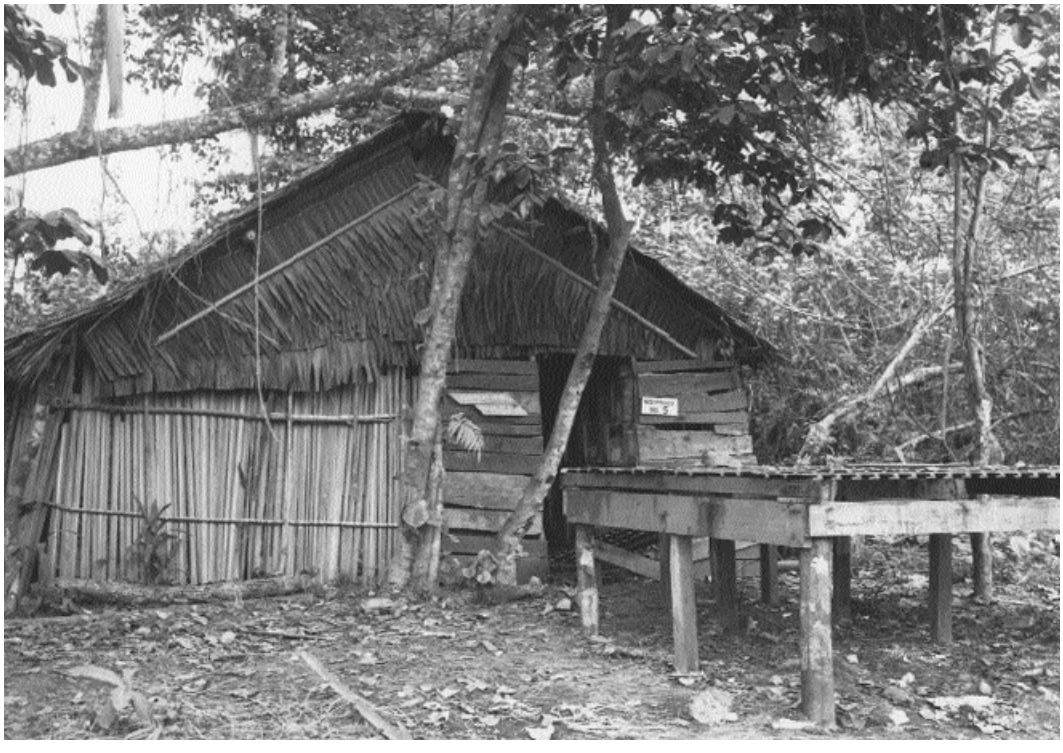
Yet interbase distribution remained poor. Requisitions often took five to seven months to fill. Supplies intended for one base arrived at another, requiring transshipment over hundreds of miles in vessels that were too few and unloading and reloading at poor, inadequate, and crowded docks. Even when available in port, the shortage of service troops, poor roads, and bad weather hampered distribution. Everywhere, the priority system favored combat materiel over medical supplies, however critical, with the single exception of antimalarials.

Repair was equally difficult. When 1944 opened, the 9th Medical Supply Depot, now in Sydney, ran the only maintenance section—a small one—in the Southwest Pacific Area. Equipment that medical units could not repair in-house was hauled to a base depot and then to Sydney. Here many items had to be farmed out to civilian contractors. Often weeks or months passed before the original unit received the repaired items. Libasci sought to meet the problem in three ways. He authorized immediate replacement by the depots; the broken item, after repair, would then return ultimately to depot stocks for reissue. In April a second, larger, and fully equipped shop opened at Finschhafen, able to repair such complex items as X-ray machines and electrocardiographs. Finally, roving repair teams went from base to base, fixing and installing equipment as required and bringing a new level of expertise to improvisation of spare parts.

In the autumn a troubleshooter sent by the surgeon general subjected the whole system to a searching investigation. Col. Tracy S. Voorhees, JAGD, a lawyer by training, had been instructed by the secretary of war to oversee administrative problems in the Army Medical Department. In consequence, he had become deeply versed in its methods of operation and its problems, and had already carried out an important survey of medical supply in the European theater. Voorhees found the harbor of Hollandia crowded with ships waiting to be unloaded and the requisition system to the United States slow and tangled in red tape. Libasci's staff was requisitioning supplies on a theater-wide basis, even though some supply depots were 2,500 miles apart. Although reforms were initiated at Libasci's urging, real relief for the theater's problems, as the surgeon general had suggested, awaited victory in Europe and the freeing of shipping—and more generally of the whole nation and its war machine—from the burdens of a two-ocean war.[28]

As noted above, lack of skilled personnel in the Southwest Pacific Area was a persistent theme of complaint by medical officers. To offset the shortages that he faced, General Denit did several things: He sought to improve efficiency by exploiting the theater consultants as teachers; he transferred specialists to

[28]See Ltr (copy), Denit to Kirk, 18 Nov 44, p. 2, file 200 Kirk-Denit Correspondence; CSurg, USASOS, SWPA, Annual Rpt, 1944, pp. 7–30, file 319.1–2; and OofSurg, Intermediate Sec, USASOS, SWPA, ETMD (copy), 15 Dec 44, p. 1, file 350.05. All in HUMEDS, RG 112, NARA. See also Charles M. Wiltse, *Medical Supply in World War II*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1968), pp. 478–81.



SHED FOR MEDICAL SUPPLIES AT ORO BAY

forward bases; and he substituted Medical Administrative Corps (MAC) officers for physicians in posts, such as assistant battalion surgeon, where a high degree of clinical knowledge was seldom needed. By doing so, he met a major problem but created a lesser one. In most units the MACs were accepted without difficulty; however, in hospitals friction developed over having them in the position of executive officer or acting commander. Doctors were willing to have only the day-to-day tasks of management shouldered by the administrative officers, who lacked medical knowledge and were usually younger.[29]

Women were essential to the medical system as nurses, dieticians, and clerical workers, but again a partial solution to one difficulty begot others. Female nurses continued to provide skilled patient care, and yet in some respects they were also a source of internal disputes and ill-feeling. Problems developed partly from the nature of the war, with its repeated invasions, and partly from the reluctance of General Headquarters, SWPA, to allow women to go into forward locations. Fear of their mistreatment if captured by the enemy, practical problems of housing and protecting them, traditional chivalry, and male chauvinism all contributed to results that injured the morale of both sexes in the SWPA medical service.

[29]Rpt, Training Div, OSG, [19 Sep 45], sub: Survey . . . , pp. 5–6, Historians files, HUMEDS, RG 112, NARA.

In the early days of each new campaign, all the work normally done by the nurses fell to the enlisted corpsmen and technicians of the mobile medical units. Yet none could win the officer status that was accorded to women nurses for such work, and as soon as the firing quieted down the enlisted men found themselves displaced or made subject to a nurse's orders. "Thus, when the nurses move in," said a report, "the morale of the enlisted element immediately hits bottom." The fact that women officers were officially untouchable and undatable by enlisted men did nothing to assuage such feelings. But officers and commanders of field hospitals were also reported to prefer male to female nurses, either because of chauvinism or resentment toward personnel who occupied TO&E slots but were absent on the day of battle. Meanwhile, nurses were deprived of opportunities to practice their professions and do the work for which they had volunteered. In turn, their disappointment and sense of exclusion led to poor morale, psychological problems, and perhaps to some pregnancies, which provided a way out of the theater.[30]

Despite Denit's best efforts, trained medical personnel in all categories—from enlisted men to specialists—remained in short supply. The chief surgeon was obliged to demand more and more of his subordinates, to deny them rotation unless replacements were in hand, and to compel them to work long, often excessive hours at the most varied tasks. No doubt fatigue took some toll of efficiency, and grumbling was common among the stressed and overworked who felt, with some reason, that they were the stepchildren of the theater they served. But in the end they bore the burden, and because of them the necessary jobs were done.[31]

The Central and South Pacific Areas

In the Central Pacific quite different command problems developed and, under Navy leadership, found their own practical solutions. For soldiers, preparations for the offensive that was to begin in late 1943 brought into being in September the new and higher headquarters, the United States Army Forces in the Central Pacific Area (USAFICPA), to which the Hawaiian Department was now subordinate. The implication was clear: Whereas previously the Army's role had been to defend and, through the military government, to administer only the Hawaiian Islands, it would now become actively involved in operations throughout the Central Pacific.[32]

As the USAFICPA commander, Lt. Gen. Robert C. Richardson, Jr., was responsible for the administration and training of all U.S. Army ground and air forces in the region, which now stretched from the west coast of the United States to the east coast of China. Once trained, his forces were subordinated to Admiral Nimitz' headquarters or to the tactical commands—the V

[30]Quotations from ibid., p. 6, Historians files, HUMEDS, RG 112, NARA. See also Rpt, Maj Margaret D. Craighill, MC, to AG, Wash., D.C., 8 Jun 45, sub: Medical and Social Condition of Women in Military Service in the Southwest Pacific Area, box 6, Margaret D. Craighill Papers, MHI.

[31]In October 1944 medical personnel in the Southwest Pacific Area totaled 61,787. See McMinn and Levin, *Personnel*, p. 368.

[32]Armfield, *Organization and Administration*, p. 383.

Amphibious Force or the V Amphibious Corps—for employment in combat.[33]

Training, logistics, resupply, and the construction, development, defense, maintenance, and manning of bases all fell under the USAFICPA. If the fundamental organizational problem for the medics in the Southwest Pacific Area was unity of direction, that in the Central Pacific Area was the extraordinary expansion of the theater across thirty-five degrees of longitude in the course of about a year. As the invasion forces traversed thousands of miles of ocean and conquered hundreds of islands, hospitalization and evacuation had to keep pace. At the same time, the troop strength of the command grew rapidly, increasing some 200 percent between June and December 1943. By charging the USAFICPA with the responsibility for providing common supplies to Marine and Navy units as well as to the Army ground forces in the Gilberts campaign, Nimitz made the headquarters his "logistical agency for the support of offensive operations." Many new bases passed into the USAFICPA's hands. In March 1944 even Tarawa, hard won by the marines, became an Army command and, in May, Saipan.[34]

General King added to his many hats by becoming Chief Surgeon, USAFICPA, in August 1943. The veteran chief surgeon of the Hawaiian Department faced challenges that were broad, complex, and interrelated. The command's area had expanded some 30 percent during 1943, and medical facilities grew accordingly. By the year's end the number of beds was double that possessed by the old department in 1942. Seven Army divisions staged in the area, and six moved out to combat; hospitals had to be provided for task forces dispatched to the Gilbert, Marshall, and Mariana Islands; and the garrisons required medical support of a more lasting nature. Meanwhile, many duties remained with the Hawaiian Department, though care of the civilian population had by now been returned to the islands' doctors and public health officials. Port and quarantine regulations still had to be enforced and training areas, replacement depots, and prisoner-of-war camps policed.

Hawaii's huge fixed hospital establishment remained and in fact grew. One happy consequence of its amplitude, when combined with King's cordial relations with the Seventh Air Force surgeon, was to exclude from this theater the conflict between soldiers and airmen over hospitalization that marred many others. With units scattered on many islands, the airmen maintained their own dispensaries but did not seek to turn them into hospitals, preferring the treatment received in those of the theater surgeon, especially in light of his sympathetic attention to their special needs. The one exception—the Hickam Station Hospital at Hickam Field near Pearl Harbor—was operated by the air force, with personnel assigned by King.[35]

The chief surgeon's office grew, decentralizing functions and expanding its staff of consultants. One function—civilian liaison—declined in significance as the

[33]"History of the United States Army Forces, Middle Pacific and Predecessor Commands, During World War II, 7 December 1941–2 September 1945," pt. 2, "Structural and Functional Development of the Army Command," 3:360–65, Ms 8–5.6 AA 2/1, CMH.

[34]Ibid., 3:367, Ms 8–5.6 AA 2/1, CMH.

[35]Armfield, *Organization and Administration*, pp. 384, 386; Buell Whitehill, "Administrative History of Medical Activities in the Middle Pacific," block 3, pp. 20–30, file 314.7, HUMEDS, RG 112, NARA.

Hawaiian Islands became more secure, and in March 1943 the military government ended, relieving the surgeon of many duties which reverted to civilian authorities. But other sections—personnel, operations and training, preventive medicine, supply, and nursing—were augmented with officers and enlisted personnel (*Chart 4*).

A basic task of King's expanded office was to cooperate fully with the medical section of the Logistics Division in Admiral Nimitz' headquarters that planned medical support for the Central Pacific offensives.[36] The management of large numbers of new personnel, the training of medical units for combat, the equipping of hospitals to accompany task forces, the allocation of funds, and the maintenance and movement of supplies especially preoccupied the chief surgeon's staff.

King's Operations and Training Section directly supported the campaigns by ensuring that officers and enlisted men received both basic medical training and advanced technical training. Medical personnel trained with tactical units at Koko Head crater, east of Honolulu. Medical officers without previous field training went to the Service Unit Officers Field Training School; units not engaged in professional work, to the Unit Jungle Training Center. The thousand nurses who worked in the Central Pacific Area trained vigorously with road marches and swimming, as well as in clinical courses offered by the general hospitals. Schools and training programs were established for technicians and laboratory assistants, and King's staff endeavored to build up the understrength specialties, notably dentists, whose numbers roughly doubled without reaching levels adequate to the needs of the troops. A school for medical administrative officers opened in December 1944, with classes supplemented by weapons qualification and jungle and amphibious training. Every effort was made to prepare the officer candidates realistically for war.[37]

At the chief surgeon's office paper work increased with the introduction of more detailed reporting on the sick and wounded. During the year the War Department instituted the essential technical medical data report, to a chorus of complaints that were later stilled when its value as a planning document and record of clinical and field experience became apparent.

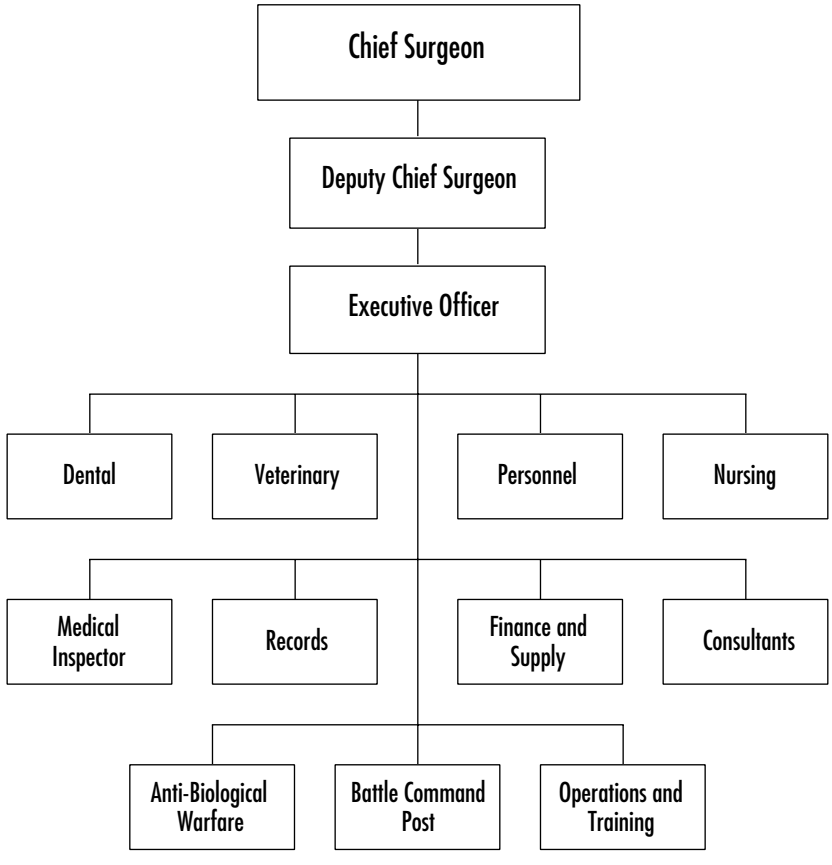
Through all the changes, the personality of the chief surgeon remained constant. Although preoccupied with planning for forthcoming operations, King long tried to maintain his habit of reading and checking the work and correspondence of his entire office; he gave up his penchant for one-man control reluctantly, in the face of a constantly growing workload. As far as possible he still kept the lines of authority centralized in his own hands, dominating an office that grew in numbers—at the end of 1943 it included 29 officers, 3 warrant officers, and 121 enlisted men—yet became ever smaller in relation to the burgeoning command it served.[38]

[36]For the Central Pacific campaign narrative, see Chapter VII.

[37]Surg, CPBC, Annual Rpt, 1944, pp. 44–45, file 319.1–2; Whitehill, "Medical Activities in Middle Pacific," block 3, pp. 25–27, file 314.7. Both in HUMEDS, RG 112, NARA.

[38]Whitehill, "Medical Activities in Middle Pacific," block 3, pp. 20–21, 23–24, file 314.7, HUMEDS, RG 112, NARA; Armfield, *Organization and Administration*, p. 386. By mid-1944 total Army strength in the Central Pacific Area was about 296,000.

CHART 4—ORGANIZATION OF THE OFFICE OF THE CHIEF SURGEON, USAFICPA, DECEMBER 1943



Source: Adapted from "History of the Office of the Surgeon, United States Army Forces, Middle Pacific and Predecessor Commands, 7 December 1941–2 September 1945," sec. 2, "Central Pacific Area," p. 3, Ms 8–5.6 AA 30/2, CMH.

The search for a more efficient organization in the Navy theaters led to the creation of logistical base commands. In the summer of 1944 Nimitz ordered the sweeping change, in view of experience gained during the westward advance of the battlefront. On 15 June the South Pacific Area was redesignated the South Pacific Base Command (SPBC), and brought under the direct command of Nimitz' headquarters; on 1 July a new headquarters, the Central Pacific Base Command (CPBC), assumed responsibility for logistical support from the USAFICPA; and on 1 August the USAFICPA became the United States Army Forces, Pacific Ocean Areas (USAFPOA), still under General Richardson.

King, leaving most of the personnel of his office in the CPBC quarters, moved with a small staff of 9 officers and 15 enlisted men—essentially, the

part of his staff that had been engaged in operational planning—to set up the USAFPOA chief surgeon's office in a separate building at Fort Shafter. Here he served the last months of a tour of duty that had lasted from before Pearl Harbor to the opening battles of the reconquest of the Philippines. He was relieved on 17 November by Brig. Gen. John M. Willis, MC. For the greater part of a year Willis' office remained small, with many posts filled by officers borrowed from the two logistical commands.[39]

The Central Pacific Base Command, inheriting the long-established medical complex in the Hawaiian Islands and adding later the Gilberts and the Marshalls, had no such problems. On 10 August, a little more than a month after becoming the CPBC surgeon, Col. Paul H. Streit, MC, established the Medical Service, an operating agency under his own command that gave him direct control of all medical units and installations on Oahu (*Chart 5*). The Medical Service took charge of the personnel and units that operated many fixed hospitals, supply depots, two concentration centers—the command's term for training and processing centers—and a convalescent and reconditioning facility. It also controlled a variety of field organizations, including mobile medical units, medical groups, ambulance battalions, and so forth. On an island that more than ever had the character of a transient lodging, many units passed through the base command for training on their way to the tactical commands operating in the western Pacific.[40]



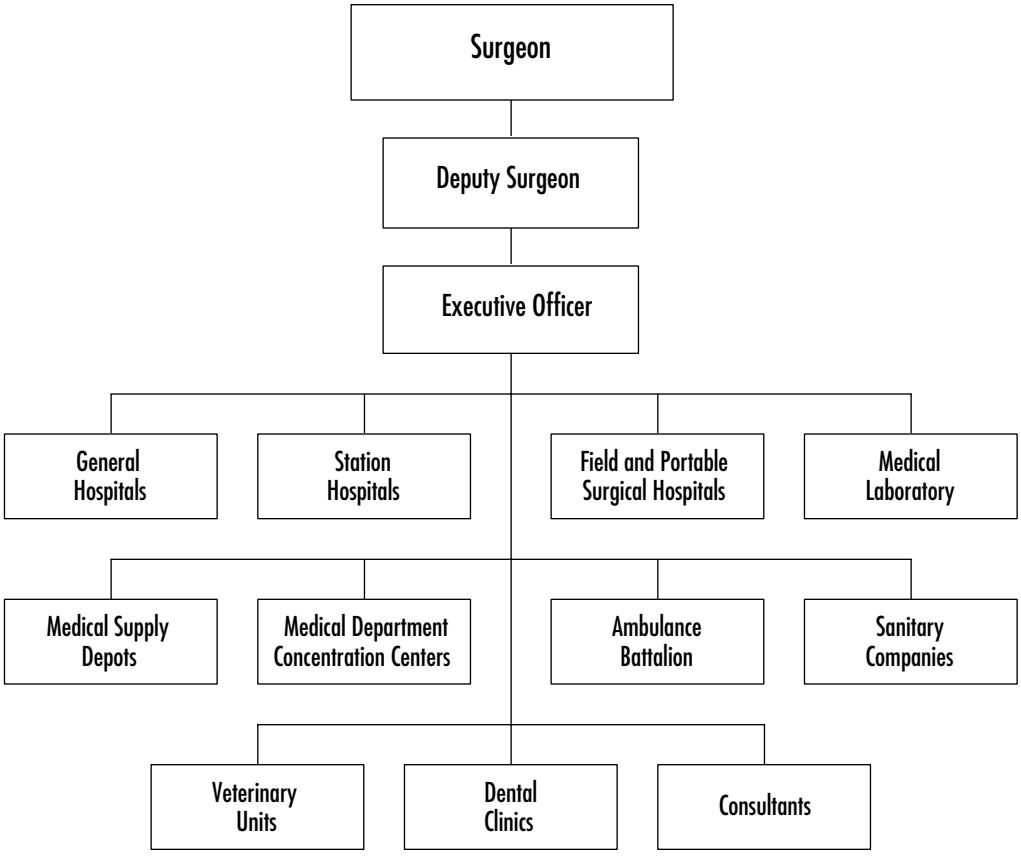
BRIG. GEN. JOHN M. WILLIS, MC

In the South Pacific Area Brig. Gen. Earl Maxwell saw his dual role as USAFISPA and USASOS surgeon end in the summer of 1944, when the theater, with its combat mission over, was transformed into a logistical command. He remained as Surgeon, SPBC, until he was relieved on 30 November by Col. Laurant L. LaRoche, MC. In May 1945 the SPBC surgeon's office was

[39]Whitehill, "Medical Activities in Middle Pacific," block 3, pp. 32–34, 37–38, file 314.7; CSurg, USAFPOA, Annual Rpt, 1944, pp. 1–2, file 319.1–2. Both in HUMEDS, RG 112, NARA. See also Armfield, *Organization and Administration*, pp. 451, 455.

[40]Whitehill, "Medical Activities in Middle Pacific," block 3, pp. 43–47, file 314.7; Surg, CPBC, Annual Rpt, 1944, pp. 1–4, file 319.1–2; Rpt, Col Harry D. Offutt, 1945, sub: Close-Out Report of Medical Service, Central Pacific Base Command, pp. 1–2, Historians files. All in HUMEDS, RG 112, NARA. Colonel Streit later rose to the rank of major general in the Medical Corps.

CHART 5—ORGANIZATION OF THE MEDICAL SERVICE, CPBC, AUGUST 1944



Source: Adapted from Rpt, Col. Harry D. Offutt, 1945, sub: Close-Out Report of Medical Service, Central Pacific Base Command, p. 6, Historians files, HUMEDS, RG 112, NARA.

transferred to the Philippines to help plan the invasion of Japan. Meanwhile, Colonel Koontz, surgeon of the New Caledonia Island Command, took on the additional duties of base command surgeon and served out the remainder of the war in these roles. Care of combat troops undergoing rehabilitation, logistical support of three combat infantry divisions (the 37th, 93d, and Americal), inspection of foodstuffs procured from New Zealand, and evacuation of casualties from the active theaters were the most important duties remaining in the South Pacific, where, in the days of the Guadalcanal fighting, bitter and decisive struggles had been the order of the day.[41]

[41]Whitehill, "Medical Activities in Middle Pacific," block 3, pp. 71–82, file 314.7, HUMEDS, RG 112, NARA. Maxwell was promoted to brigadier general on 19 January 1944.

The Medical Picture

To the soldiers wounded in more recent island battles, the base commands meant primarily evacuation to hospitals for definitive treatment of their injuries or illness. For them the transition must have been extraordinarily abrupt; a few days on ship and aircraft moved them from primitive jungles to a world of abundant food, of tolerably sophisticated science, and sometimes of urban amenities and female nurses as well. Their wounds or illnesses were the price—often a high one—they paid for such a journey, and the medical skill required to repair the ravages of war was great.

Evacuation from the Central Pacific Area more than doubled during 1943, and included over a 1,000 evacuees from the Southwest Pacific Area who passed through the Hawaiian Department on their way to the mainland. Air evacuation from Oahu began in January, at first by tactical aircraft and later by the planes of the Air Transport Command's Pacific Wing. The total for the year was exactly a dozen casualties, all critical cases! But major changes were already under way. The meager record of air evacuation had reflected many factors, including the lack of an urgent need in a theater with little combat and the lack of planes suitable for long-distance transport.

But with the opening of the Gilbert Islands campaign the necessity of moving the seriously wounded quickly over some 2,000 miles of ocean to Oahu made long-distance evacuation a necessity. The Central Pacific Combat Air Transport Service was organized, drawing units and planes from the Army, Navy, and Marine Corps. The Navy's PBY amphibious planes evacuated from battle sites until airfields could be put into operation and utilized by Army and Marine transports. The Air Transport Command's large C–54A aircraft covered the longest leg. In November 1943 Tarawa casualties began to reach Hickam Field, and out-of-theater evacuation soon followed. Air evacuation rapidly established itself as a crucial element of medical support for the Pacific Ocean Areas. Critical improvements in techniques, equipment, and personnel were contributing factors. The big planes were equipped with brackets for holding litters, and trained flight nurses based at Tarawa accompanied the wounded on the long jump to Hawaii. Flight surgeons were substituted for untrained medical officers, one of whom at an earlier time had spent an entire trip being airsick while his single patient looked on sympathetically from his stretcher.[42]

Precise measurement of the effects of the new system are difficult, for reorganization of the USAFICPA chief surgeon's office contributed to a lack of adequate statistics for 1944, the year when the evacuation system was suddenly overburdened by increased numbers of casualties. As the theater vastly expanded in area, in excess of 22,000 evacuees had to be moved much farther. The proportion of air evacuation greatly increased, comprising virtually all intratheater movement in the South and Central Pacific Base Commands and about 50 percent of that to the United States. The impact of the campaigns on the hospitals was great: In the aftermath of the Marianas fighting, when the USAFPOA headquarters was compelled to reduce its evacuation poli-

[42]Ibid., block 8, pp. 4–6, file 314.7, HUMEDS, RG 112, NARA; Futrell, "Aeromedical Evacuation," pp. 399–401, copy in CMH.



USAFPOA HEADQUARTERS, FORT SHAFTER, *where the chief surgeon's office was located*

cy from 120 to 90 days, hospital beds were emptied at the cost of straining transportation, losing combatants, and finding replacements.[43]

Sheer distance remained the single greatest difficulty, whether evacuation was viewed as a problem in treatment, transport, or time. During Operation FORAGER the Navy planned to evacuate by surface craft from the Marianas to Kwajalein and then by air to Oahu (six Navy and five Army planes were assigned the task). Incidental aircraft were also to be exploited, while surface craft were to evacuate from Kwajalein both to Hawaii and to the South Pacific Area. As matters turned out, however, the Army had to assign ten C–54s, rather than five, and some Saipan Island casualties were carried by Seventh Air Force transports without benefit of medical care during flight. When the battle wounded crowded the wards of the Oahu hospitals, Kwajalein provided a new evacuation route to Guadalcanal. Neuropsychiatric cases, which rose to 25 percent of total evacuations during 1944, presented a special problem; precautionary measures had to be adopted to enable them to travel by air, by sedating heavily those who needed restraint. By the end of 1944 out-of-theater evacuation had followed the same pattern, though at a slower pace—78 percent of casualties moved by air. Emergency cases and

[43]Whitehill, "Medical Activities in Middle Pacific," block 8, pp. 8–12, file 314.7, HUMEDS, RG 112, NARA.

those requiring treatment in the United States received first priority, based on decisions made by disposition boards at each hospital. An Air Transport Command surgeon also screened evacuees to ensure that they could endure the trip.[44]

At the general hospitals on Oahu soldiers with wounds and illnesses contracted in the active theaters trickled in during 1943, but treatment of the troops training on the island and of civilian patients was more typical. One hospital reported its most interesting case—a young soldier, accidentally shot through the bowels during target practice, whose life was saved, despite gross fecal contamination, by the use of penicillin. Another hospital cited the treatment and ultimate recovery of a civilian stung during swimming by a dangerous jellyfish! For such rear area medical installations, the war began in earnest with the arrival of the first battle casualties from the Gilberts. At North Sector General Hospital "the receipt of these casualties seemed to cause a general pick up [*sic*] in morale and a feeling that . . . [its personnel] were taking a greater part in the war effort than they had realized."[45]

The creation of the Central Pacific Base Command and its medical service tightened medical organization in the Hawaiian group. A single center was established at the 22d Station Hospital for neuropsychiatric cases, not only for their own treatment but to prevent "contagion" of the other troops. During 1944 a convalescent and reconditioning center expanded from 400 to 1,000 beds, and a special section for diseases of the chest was set up at the 147th General Hospital and a center for neurosurgical cases at the 218th General Hospital. Experience in the treatment of tropical diseases, such as malaria and filariasis, increased with the return of casualties from the forward areas. But the primary concern was the battle wounded, for whom at least 2,500 beds were available at all times. Peaks followed the surges of combat, with notable influxes during February, July, August, and December 1944. In fact, as the CPBC surgeon emphasized, the command received all types of casualties, medical as well as surgical, nonbattle as well as battle.[46]

During 1944 the development of new medical complexes on captured islands left the Hawaiian facilities little to do for casualties but to receive the overflow of the forward bases. (During the Marianas fighting a station hospital on Kwajalein expanded to 1,300 beds, filling newly erected air force barracks with the wounded.) Indeed, the number of beds in the Central Pacific Base Command fell by about 2,100, the net result of a sharp reduction in facilities on the outer islands of the Hawaiian group, where invasion clearly was no longer a threat, and of many departures for the tactical commands and island garrisons. But by the end of the year the Pacific Ocean Areas included the Marshall, Gilbert, and Mariana Islands, and General Willis,

[44]Ibid., pp. 12–15, file 314.7, HUMEDS, RG 112, NARA. During 1945 evacuations increased by 88 percent, to 41,857. However, this may be partly the effect of better statistics collected after December 1944.

[45]204th Gen Hosp Annual Rpt, 1943, app. 6, p. 6, and North Sector Gen Hosp Annual Rpt, 1943, pp. 17, 28 (quotation), in CSurg, USAFICPA, Annual Rpt, 1943, file 319.1–2, HUMEDS, RG 112, NARA.

[46]Surg, CPBC, Annual Rpt, 1944, pp. 6 (quoted word), 19–20, file 319.1–2, HUMEDS, RG 112, NARA. In neuropsychiatric admissions during World War II the Pacific Ocean Areas stood third after the Southwest Pacific Area and the Mediterranean theater. See Reister, *Medical Statistics*, p. 44.

as the USAFPOA chief surgeon, provided technical guidance and direction for Army hospitals in all. Hospitals of various types were formed from those existing in the Hawaiian Islands to accompany the task forces and to provide for the needs of the garrisons after the battle.[47]

Various subordinate commands—the United States Army Forces in Tarawa, Kwajalein, Eniwetok, and so forth—were established under the USAFICPA in 1944. The creation of Army and Navy island commands determined which service took responsibility for the hospitals there, but did not preclude the hospitals of one service from being assigned to the other service's command. In the Marianas, for example, Saipan became an Army base; Guam and Tinian, Navy bases. On Saipan the original base development plan included a general and two station hospitals, all Army, but Guam was to have an Army station hospital as well. The growth of Tinian as a major air base devoted to strategic bombing was paralleled by a great multiplication of general and station hospitals in the Marianas. By the year's end the USAFPOA had over 14,000 fixed beds, a trifle less than its authorization of 6 percent of troop strength.[48]

The opening of combat in September 1943 gave new importance to preventive medicine in what had been a comparatively healthy theater, concerned mainly with the problems caused by wartime population pressures in Hawaii. When the USAFICPA was established, its medical inspector's section developed the command's preventive medicine program; a single officer served as epidemiologist and medical intelligence chief, devoting much time to acquiring data on the Japanese-held islands from sources in Hawaii, an effort that apparently duplicated those of the surgeon general's medical intelligence operation. In the successor commands the medical inspector's section remained part of the CPBC surgeon's office, whereas at the USAFPOA headquarters two officers carried out preventive medicine as additional duties. Col. Charles T. Young, MC, took over some aspects of the program in addition to his work as



147TH GENERAL HOSPITAL UPPER RESPIRATORY WARD

[47]See Chapter VII.

[48]"History of the Office of the Surgeon, United States Army Forces, Middle Pacific and Predecessor Commands, 7 December 1941–2 September 1945," sec. 2, "Central Pacific Area," p. 22, Ms 8–5.6 AA 30/2, CMH; Rpt, Lt Col Lamar C. Bevil, 15 Apr 44, sub: Brief of the Central Pacific Area, p. 3, bound in "Brief of Pacific Ocean Areas," file 319.1, HUMEDS, RG 112, NARA; John B. Flick, Forrester Raine, and Robert Crawford Robertson, "Pacific Ocean Areas," in Carter, ed., *Surgical Consultants*, 2:663–64. The XXI Bomber Command launched its first raid against Tokyo from Tinian in November 1944.

consultant in medicine, and Col. Elbert Decoursey, MC, commander of the 18th Medical General Laboratory, was designated epidemiologist and sanitation officer.

But the theater still lacked a formal preventive medicine organization, a fact duly noted by Brig. Gen. James S. Simmons, MC, the active chief of the Preventive Medicine Service, Office of the Surgeon General, who conferred with General King about the problem in early autumn 1944. In November Lt. Col. Thomas G. Ward, MC, became chief of a newly formed Preventive Medicine Section in the Office of the Chief Surgeon, USAFPOA.[49]

Ward established a section that replicated in many ways the structure of Simmons' service in Washington. Traditional concerns for venereal disease, sanitation, immunization, and the gathering of health statistics were supplemented by special attention to tropical diseases, industrial hygiene, and medical intelligence. A specialist, Lt. Col. Paul A. Harper, MC, was brought in from the South Pacific Area in late November to be theater malariologist, as USAFPOA subordinate commands planned advances into regions where the disease was endemic. Control of insects increasingly meant the systematic application of DDT. Venereal disease had never been much of a problem in the theater, and was chiefly interesting for the variety of approaches on different islands. On American Oahu houses of prostitution were closed in 1944, with a reported drop in infections. On French-mandated islands garrisoned by U.S. forces, civil authorities operated houses of prostitution, but the women had to undergo regular examinations conducted by American medical officers. Either way seemed to work, if carefully administered, although some cases of infection inevitably escaped the examiner's eye. The Hawaiian experience suggested that, from the medical officer's point of view if not the young soldier's, suppression was somewhat more satisfactory, for the cheapness and convenience of brothels increased the number of sexual contacts, which in turn was reflected in the incidence of venereal disease. The difference, however, was not very great.

Nutrition presented a question of potentially greater importance. Rations were balanced in theory, but parts of them remained so unpalatable that the troops, because of selective eating, developed deficiencies, a difficulty solved by requiring vitamin pills as a supplement. Water supply continued to be a problem on some islands, as local sources were still of poor quality. Lacking adequate supplies of halazone (chlorine) tablets, the theater attempted to solve the problem by sending water with the assault forces and establishing filtration plants as soon as possible after victory was won.[50]

In many respects, Ward's Preventive Medicine Section apparently did little but systematize the procedures already under

[49]Office of the Surgeon (OofSurg), United States Army Forces in the Pacific Ocean Areas (USAFPOA), "History of Preventive Medicine," p. 1, file 314.7; Office of the Surgeon, United States Army Forces in the Middle Pacific, "History of Preventive Medicine," pp. 23–31, file 314.7; Whitehill, "Medical Activities in Middle Pacific," block 12, pp. 1, 10–11, file 314.7; CSurg, USAFPOA, Annual Rpt, 1944, p. 9, file 319.1–2. All in HUMEDS, RG 112, NARA.

[50]OofSurg, USAFPOA, "History of Preventive Medicine," pp. 43–47; Whitehill, "Medical Activities in Middle Pacific," block 12, pp. 1, 18–20. Both file 314.7, HUMEDS, RG 112, NARA.

way—spraying corpses with sodium arsenite, for example, and impregnating uniforms with miticides to guard troops against scrub typhus. Epidemiology teams were sent into forward areas; a dengue team brought aerial DDT spraying to Saipan; and in the 1945 campaigns dysentery epidemics were halted by identifying the cause and applying control methods. The many problems encountered in the conquered islands suggested the need for a school of preventive medicine, which was eventually set up on Okinawa in mid-1945.

Excluding the assault phases of the various campaigns, disease caused over 80 percent of the theater's noneffectives during 1944, despite the lack of serious illnesses and a continuing low venereal disease rate. A tropical climate, crowding and stress, and poor conditions on transports were all contributors, and served to underline the continuing importance of preventive medicine.[51]

Supply

Medical supply presented daunting challenges as the theater grew and as assault forces, in ever greater numbers, moved from the West Coast and Hawaii over constantly increasing distances to strike at enemy-held islands. To equip a large invasion force with medical supplies required initial approval by the War Department, requisitions to the San Francisco Port of Embarkation, and endless conferences with the units involved to establish a basis of issue for every item. Then a detailed plan was prepared, called a combat project, and forwarded once again through area headquarters to the War Department for final approval. Proposals to reform this tedious process were often heard, and a new procedure was adopted by the Army in December 1944. Implementation, however, proved no less time-consuming than the combat project method, and the war ended without comprehensive reform.[52]

Combat units arrived in theater minus essential medical supplies. Assemblages forwarded from the mainland had similar gaps, caused by spot shortages in the mainland depots. Since the units could not be sent into combat without equipment, medical supply officers in Hawaii had to replace any shortfalls within schedules set by the plan of attack and hoped to recoup them later through requisitions from the mainland. The danger of attack during the early years of the war led to a program of dispersing supplies on the outer islands of Hawaii; when American forces shifted to the attack, the supplies had to be concentrated again, at the chief surgeon's order, to economize on time, personnel, and facilities. Preparation for each combat operation was a complicated affair—checking equipment, deleting nonessential items, palletizing and waterproofing, preparing thirty-day 3,000-man medical maintenance units for resupply, repacking medical chests into canvas packs, and so forth.

Despite the complications introduced by combat, Colonel Voorhees reported in his October 1944 study "the outstanding fact . . . that Medical Supply [in the Central Pacific Base Command] has been and is thoroughly adequate."

[51]OofSurg, USAFPOA, "History of Preventive Medicine," pp. 43–47, file 314.7; Whitehill, "Medical Activities in Middle Pacific," block 12, pp. 14–15, 24, file 314.7; CSurg, USAFPOA, Annual Rpt, 1944, pp. 6, 9, file 319.1–2. All in HUMEDS, RG 112, NARA.

[52]Whitehill, "Medical Activities in Middle Pacific," block 6, p. 3, file 314.7, HUMEDS, RG 112, NARA.

Both King's thoroughness in directing the Hawaiian Department during the early years of the war and the long period of preparation for combat facilitated the creation of a system "more satisfactory . . . than [in] other theaters." As with hospitals, the arrangements in Hawaii designed to guard against attack had ceased to be necessary, and it was at Voorhees' suggestion that the chief surgeon acted to consolidate supplies in the Hawaiian Supply Depot. The main weakness uncovered was the absence of a chief supply officer in the chief surgeon's office. King promptly appointed Maj. Donald E. Remund, MAC, and Willis, King's replacement, Maj. Louis F. Williams, MAC, from the Office of the Surgeon General.[53]

The rapid growth of the hospital system imposed supply requirements only a little less pressing than those of the assault forces earlier. Looking to future operations that would involve the combat of large forces, the Army planned to install some 8,000 fixed beds in the Marianas—about 5,000 of them on Tinian, where Army engineers were constructing airfields for heavy bombers to attack Japan. The location of the islands and the ample facilities for air evacuation made them ideal; however, hospitals demanded complex supplies, many provided by the engineers who built the hospitals but some issued by the medical service. Fluorescent lighting fixtures for operating rooms in Quonset huts were developed by the engineers in conference with members of the chief surgeon's office and constructed in the field for all island commands, using materials on hand. Field expedients, cooperative action by the two technical services, and the coordinating effect of a single island command all contributed to the development of the new medical complexes.[54]

A variety of limited improvements in supply were recorded during 1944, most coming in response to Voorhees' report and action by the theater headquarters. A shift from automatic resupply to requisition by the Central Pacific Base Command made for a more responsive system, one capable of adapting to the new phase of the war. But the 3,700 miles that separated Oahu from the Marianas complicated the process of establishing a closely-knit supply network. Duplication, overages, and occasional shortfalls could be minimized but not eliminated, and the chief supply officer, despite hopes that had attended his appointment, depended mainly on informal contacts in his dealings with the nearly autonomous island commands. More valuable than improvements in organization was the increased capability of mainland depots to assemble and ship virtually complete hospital units by mass-production methods that rendered hand assemblage in Hawaii out of date. And the matured wartime productive capacity of the United States made up for organizational failings in enabling the forces under Nimitz' tactical commanders to be supported across many thousand miles of sea.[55]

Voorhees' report to Surgeon General Kirk on the Pacific supply situation as a whole emphasized the problems caused by the multiple commands in the region, with no coherent system for redistributing excess stocks. Confirming the gut feeling of many SWPA medical

[53]Ibid., pp. 1 (quotations), 28–36, file 314.7, HUMEDS, RG 112, NARA; Wiltse, *Medical Supply*, p. 481.

[54]Dod, *Corps of Engineers*, p. 493.

[55]Wiltse, *Medical Supply*, pp. 468–81.

officers, Voorhees found that excesses had piled up in the two Navy-run theaters, in part at least because the great overseas distances had produced critical shipping shortages. Stocks had accumulated in rear areas, in some cases abandoned there by fighting units that expected to be issued new supplies in the combat zone. Lack of a unified command structure prevented the transfer of excess supplies and supply personnel to the areas of greatest need. The time was fast approaching when a greater degree of unity would become essential to the forces that were converging for climactic battles in the western Pacific.[56]

Personnel

Perhaps the most striking fact about medical personnel in the Central Pacific Area during 1944 was that little growth occurred during a time of increasingly heavy combat—primarily because the USAFICPA and CPBC headquarters, after organizing and training their forces, sent them to the amphibious commands to do their fighting. Army medical strength in Admiral Nimitz' command was, however, large and growing. In the autumn of 1944 Army medics totaled about 34,500 to support 429,000 troops; by contrast, MacArthur's command had about 52,000 medics to support 706,000 soldiers. The proportion of medical personnel to troops was nevertheless about the same, 87 per 1,000 in the Southwest Pacific Area and 81 per 1,000 in the Pacific Ocean Areas.[57]

The absorption of the former Central and South Pacific Area headquarters meant that the USAFPOA chief surgeon became responsible for the proper utilization of medical personnel, but by the end of 1944 the necessary records still had not been completely forwarded. Despite this gap, General Willis' office gradually built up an alphabetical index file for the whole of the Pacific Ocean Areas, containing a card for each Medical Department officer, male and female, with military service and professional experience. As new medical officers were assigned to the theater, the commander of the Replacement Depot submitted their names and qualifications to the chief surgeon, who offered his recommendations on their assignments. Additionally, Willis sometimes suggested changes in the assignments of officers already in the theater. Promotion lists came first to the chief surgeon, who scanned the names to verify eligibility and competence and then forwarded them to the command's adjutant general with his recommendations. Such an assessment was absolutely necessary, for the promotion of a medical officer implied having a certain level of professional medical and military competence.

Introduction of the military occupational specialty (MOS) system during 1944 added a new wrinkle: Every officer received an MOS number and letter classification. The three top medical officer categories were 3100 (General Duty), 3139 (Internal Medicine), and 3150 (General Surgery). These specialities accounted for over 80 percent of doctors assigned to non-hospital units and 60 percent to hospital units in the theater, based on the fact that some officers held more than one MOS classification. As a control device, the system remained somewhat crude because the fine points of medical competence, such as board qualification and certification, were not

[56]Armfield, *Organization and Administration*, p. 454.
[57]McMinn and Levin, *Personnel*, p. 368.

included. But the MOS system did help to reveal some interesting peculiarities of the theater medical setup in midwar. Psychiatrists represented 3.8 percent of the total MOS specialists in hospitals—a welcome fact in a theater where NP evacuations were high through 1944. A critical shortage was in orthopedic surgeons, numbering only forty-one, even though the theater had sixty-six hospital units.[58]

In contrast to the reluctance displayed by General Headquarters, SWPA, the Army commands in Navy theaters tended to move their female nurses rapidly into forward areas, though not during actual combat. The tradition established in the South Pacific Area continued through the reorganizations of 1944. The Army garrison force on Saipan received its first Army Nurse Corps officers in August, shortly after the island had been declared secure. Here, like many of their patients, some 60 percent fell ill during the dengue outbreak that followed the conquest. As usual, they performed creditably under difficult conditions. Throughout the year the tendency was for nurses to move toward the front, which created at least a potential problem for the Oahu hospitals. Understaffed, they drew nurses from hospital units staging and training in the Hawaiian Islands; as the units moved on, the nurses accompanied them, to be replaced by others newly arrived from the mainland. But as the center of gravity for the Central Pacific Area shifted westward, the CPBC director of nursing—who served on the USAFPOA chief surgeon's staff in the same capacity as an added duty—anticipated shortages and hoped for rotation back to Oahu of nurses who had worked twenty-eight months or longer in forward areas.[59]

Medical consultants were preoccupied with the qualifications of personnel from the standpoint of improving the quality of medical service in the Pacific. Active and energetic was Col. Ashley W. Oughterson, MC, a Yale clinical professor who served as surgical consultant on the USAFISPA and then USAFPOA chief surgeon's staff; he visited every medical unit in the command and established "broad policies and . . . guiding principles" for combat surgery, embodying his view of the war in a diary that was both caustic and compassionate. The psychiatric consultant, Lt. Col. M. Ralph Kaufman, MC, established schools of military neuropsychiatry in areas were divisions were undergoing rehabilitation or were being readied for combat. The Central Pacific Area lacked a dental consultant, although Col. Harry M. Deiber, DC, the CPBC dental surgeon, functioned in essentially that role. Like the chief nurse, Deiber also served on the USAFPOA chief surgeon's staff as an extra duty. His main task was the difficult administrative one of shuffling a consistently understrength group of officers to provide support to an increasingly scattered command.[60]

Despite many difficulties the mood of the medics in the Pacific theaters was upbeat as the winter campaigns of 1944–45 moved closer. Against most bitter resistance the fighting forces had

[58]CSurg, USAFPOA, Annual Rpt, 1944, pp. 7–8, file 319.1–2, HUMEDS, RG 112, NARA.

[59]Ibid., p. 10, file 319.1–2, HUMEDS, RG 112, NARA.

[60]Ibid., pp. 11–12 (quotation, p. 11), file 319.1–2, HUMEDS, RG 112, NARA. Selections from Oughterson's diary have been published in his chapter, "From Auckland to Tokyo," in Carter, ed., *Surgical Consultants*, 2:767–887.

achieved major triumphs, and combat and support forces alike had matured into veterans. The problems of the medical service were mainly those of success, and so comparatively easy to bear. The long confusion over authority in the Southwest Pacific Area had been brought to an end; the course of combat had reduced the South Pacific to a communications zone and Hawaii, once threatened by the enemy, to a base in the distant rear of operations.

With great difficulty, the problems of fighting in the environment of disease-ridden jungled islands had been met if not mastered. Now combat loomed on large islands with heavy populations, as well as on small dots of rock and coral that a desperate enemy would defend to the death—a prospect that promised to summon every reserve of skill and courage in a medical service that had learned the art of saving lives in the midst of war.

CHAPTER IX

The China-Burma-India Challenge

While the Allies struggled against the Japanese on the islands of the Pacific, their forces also fought in the Burmese jungles to reopen land access to the embattled Republic of China. In Burma, in mountainous lands remote from Allied bases, medical personnel confronted jungle warfare and in China the disease environment of an ancient civilization still living in the sanitary equivalent of the Middle Ages.

Seven months before Pearl Harbor the United States began to aid Chinese leader Generalissimo Chiang Kai-shek with lend-lease supplies and technical advice. The American Military Mission to China, an advisory group, was dispatched to the provisional capital of Chungking. The supplies followed a tortuous course through the Burmese port of Rangoon, ultimately arriving in unconquered southern China via the Burma Road. Two junior medical officers accompanied the mission, but direct support to those who moved the supplies was the province of an American medical missionary, Gordon S. Seagrave, whose hospital at Namhkam was close both to the Burma Road and to the Chinese border.

A surgeon of limited ability but wide experience, with a hard-driving, impatient personality, Seagrave began to treat the coolie roadbuilders and the drivers of the lend-lease trucks that careened down the precipitous muddy track. Finding that the drivers carried venereal disease, while the coolies were scourged by malaria, he set up a system to provide care at small nurse-operated hospitals. He visited these medical outposts regularly in an ambulance to dispense medicines, check the progress of patients, and carry serious cases back to Namhkam for fuller treatment.[1]

Pearl Harbor intensified America's involvement. During the second week of December the United States and China became cobelligerents. After the Combined Chiefs of Staff created a China theater of operations, a U.S. Army task force, headed by Maj. Gen. (later Lt. Gen.) Joseph W. Stilwell, was dispatched to China. In February 1942 Stilwell, traveling with an advance party,

[1]Gordon S. Seagrave, *Burma Surgeon* (New York: W. W. Norton and Co., 1943), pp. 115–18, 134; Charles F. Romanus and Riley Sunderland, *Stilwell's Mission to China*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1953), pp. 13–17, 27–29; Robert G. Smith, "History of the Attempt of the United States Army Medical Department To Improve the Efficiency of the Chinese Army Medical Service, 1941–1945," 1:1–4, file 314.7, Historical Unit Medical Detachment (HUMEDS), Record Group (RG) 112, National Archives and Records Administration (NARA), Washington, D.C.

flew to Chungking, where on 4 March he established the command called the United States Army Forces, China, Burma and India (USAFCBI). At the suggestion of Chiang Kai-shek, the Supreme Commander, Stilwell became his chief of staff and commanding general of the Chinese forces in Burma. Stilwell's staff surgeon was Col. Robert P. Williams, MC, a tough practical-minded Regular Army officer who would later wear one star.

Meanwhile, in December 1941 the Japanese had invaded Burma and in a few months' time cut China's last land link to the Western Allies. As a desperation measure, American pilots began to fly the "Hump," taking supplies from British bases in India across the Himalayas to China. Stilwell's original mission to equip, train, and advise the Chinese forces was followed by another—to reopen a land route from India to China. The Army's medical mission developed in this context. Medical personnel would support the campaigns in the jungled mountains of northern Burma while attempting to improve the medical service of the Chinese Army. As a result, the Medical Department would come to know the Chinese military perhaps more intimately than any other branch of the U.S. Army, for American surgeons and hospitals would go into combat with Chinese units that lacked medical support of their own.

Medics would also, to their sorrow, come to know the China-Burma-India (CBI) theater, established on 6 July 1942. Larger than the continental United States, the theater was marked by extremes of climate and terrain. Modern sanitation was unknown, and almost every tropical disease flourished there. With the theater at the bottom of the War Department's priority list, supplies were often inadequate, and their distribution was impeded by antiquated transport systems and pervasive graft, speculation, and theft. In time, partial answers would be found for many of the daunting problems of preventive medicine that the CBI presented. But the struggle would not be an easy one, and the victory once attained would be little appreciated by a world intently watching the decisive battles in the Pacific Ocean and in Europe.[2]



BRIG. GEN. ROBERT P. WILLIAMS, MC
(Rank as of 27 May 1949)

[2]Romanus and Sunderland, *Mission to China*, pp. 50–80, 193; James H. Stone, "United States Army Medical Service in Combat in India and Burma, 1942–1945," 1:1–2, 18, Ms 8–6.2 AG, files of U.S. Army Center of Military History (CMH), Washington, D.C.; Smith, "Chinese Army Medical Service," 1:4–7, 17, file 314.7, HUMEDS, RG 112, NARA.

The Burma Campaign

On 6 March 1942 the Burmese capital of Rangoon fell to the Japanese, despite the efforts of two British Indian brigades. The British units and a swarm of hapless refugees retreated northward from the burning city, along the roadbed of the all-important railroad that connected Rangoon, via Mandalay, to the northern terminus of Myitkyina and the eastern terminus of Lashio. In turn, Lashio was the point of origin of the Burma Road. The Chinese offered assistance to the crumbling Allied cause. Two of Chiang Kai-shek's field armies entered Burma, and the Allies established a new defensive line at Toungoo, north of Rangoon.

Seeking to rally the retreating forces, Stilwell set up his own headquarters at Maymyo, in the hill country near Mandalay. Colonel Williams arrived at Lashio on 19 March. He found that the Chinese Army medical service, supposedly well supplied with manpower at all levels, from battalion to army headquarters, was in fact a mere skeleton. The 100,000 Chinese soldiers, spread over some 3,000 square miles of Burmese jungle and rice fields, were supported by only five graduate doctors and nine ambulance trucks. Chinese medics were hopelessly ill trained and poorly equipped. Supplies, including 150 tons of Red Cross material, were scattered among Calcutta, Lashio, and Karachi. Additional Chinese and American medical units were said to be on the way, but the time of their arrival was unknown.[3]

Some help was available. The British were already providing medical aid to China, including several Burmese units, supplies, volunteer medics of the Friends Ambulance Unit, and some beds in local hospitals. Additionally, the British asked Seagrave to support the Chinese 6th Army, and organized his people as a civilian mobile surgical hospital. On learning of Stilwell's arrival, he volunteered to serve under Colonel Williams, and on 21 April was sworn into the U.S. Army as a major in the Medical Corps. At Seagrave's request, Williams divided the hospital unit, providing support to both the Chinese 5th and 6th Armies. Other medical officers arrived to help Seagrave. Capt. Donald M. O'Hara, DC, a dentist, came directly from the States and Capt. John H. Grindlay, MC, a skilled surgeon with a background at Harvard and the Mayo Clinic, from the American Military Mission to China.

Such aid was welcome but insufficient, as hard fighting on the Toungoo front demonstrated. On 10 April Seagrave recorded a daily round that featured hideous wounds, determined good spirits, and unrelenting work with inadequate means:

> I found that Grindlay and O'Hara had been scrubbing out the operating room themselves with cresol. Grindlay found pieces of amputated fingers and toes in the plaster of Paris and wound refuse on the floor! No sooner had we finished lunch than the Friends brought in another thirty-five patients. One of them had his enlarged spleen shattered by a shell fragment. Insects were so numerous that they kept dropping into the wounds of the abdominal cases.[4]

Repeatedly bested by the Japanese, the Allies retreated toward the north.

[3]Stone, "Medical Service in India and Burma," 1:2–3, 7–8, 15, Ms 8–6.2 AG, CMH.

[4]Ibid., 1:5–6, 17, Ms 8–6.2 AG, CMH; Seagrave, *Burma Surgeon*, pp. 139–41, 151–52, 160–62, 172–73 (quotation). The plaster of Paris was used to make casts.



DR. GORDON S. SEAGRAVE *(left)* AND CAPT. JOHN H. GRINDLAY *and Burmese nurse scrubbing for surgery*

Colonel Williams was forced to improvise an evacuation system, using a few hospital trains from the British and a hospital ship, the *Assam*, that plied the Irrawaddy River. For a time in March he even had air evacuation—ten C–47s. His first requests were for American field units—a medical regiment, three field hospitals, and three medical battalions. He wanted to provide small mobile units as spot support to the Chinese Army and, through the medical battalions, hoped to organize the chaotic evacuation system as well.[5]

But when the Japanese crossed the Irrawaddy River in April, the Allied forces withdrew in great confusion, swamping the inadequate means of moving wounded. Undoing much work, the fragile medical system buckled under the strain. Patients who could walk took to the roads unhealed, while others were abandoned to die untended. Cholera, smallpox, and dysentery broke out among the refugees, civilian and military. Exhaustion, hunger, and enemy bombs and gunfire joined with disease to mark the trails leading into the mountains with abandoned carts, bundles of once-prized possessions, and human bones, sometimes in great mass-

[5]Stone, "Medical Service in India and Burma," 1:8–13, 16, Ms 8–6.2 AG, CMH.

es, where whole encampments perished together.[6]

For a time Colonel Williams personally delivered supplies to Seagrave's hospital section. Then on 18 April the final collapse began, and within ten days the front had ceased to exist. The British and the Chinese 5th Army retreated toward India, the 6th toward China. Joining the flight of General Stilwell's headquarters toward Imphal, Williams served as the headquarters detachment medical officer throughout an epic march. Despite stress and danger, the headquarters detachment was well supplied with medical support, for Seagrave's section made up almost 40 percent of the group—doctors, members of the Friends Ambulance Unit, Burmese nurses, and servants.

All had their work cut out for them. Seagrave took daily sick calls, until felled by illness himself. When the motorized vehicles—jeeps, sedans, and trucks—had to be abandoned, most of the party marched afoot; the sick rode ponies. For part of the journey they rafted down a jungle river, the Uyu, where monkeys screamed in the trees and tiger spoor showed on the sandbars. Food and medical supplies arrived by parachute drops into clearings, or through the canopy of dense jungle foliage. The Burmese nurses, tireless walkers despite their fragile appearance, cheerfully nicknamed Stilwell "Granddaddy" and Williams "Second daddy," and maintained the pace better than many of the Americans.[7]

Complaints were futile, for no one could fall behind and live. On one occasion Stilwell observed Seagrave wrapped in a blanket and shaking with a malaria chill. He stopped and asked:

"What's the matter, Seagrave, got fever?"
"No, sir, I got wet and felt a little cold so was warming up."
"How are your feet?"
"Better, sir."
"You are lying."
"Yes, sir."

The hard-used party ended the trek by climbing the steep forested ridges of the Chin and Naga Hills. When Williams protested that some could not keep up, Stilwell replied, "Dammit, Williams, you and I can stand it. We're both older than any of them. Why *can't* they take it?" In the end they did. With medical aid at hand and Stilwell to drive them, they reached Imphal without a single loss.[8]

Here the leaders reviewed the wreckage of a failed campaign. Thousands of Chinese soldiers had perished during the retreat, and the condition of the Indian refugees was pitiable. The British command attempted to put the best face possible upon the disaster, but Stilwell refused to mask facts. "I claim we got a hell of a licking," declared Vinegar Joe. "We got run out of Burma, and it's humiliating as hell."[9]

Attempting to bring order out of the chaos, Colonel Williams reunited the

[6]Ibid., 1:16–19, Ms 8–6.2 AG, CMH.

[7]Seagrave, *Burma Surgeon*, pp. 177–81 (quotations, p. 180), 207–19.

[8]Ibid., pp. 220–35 (first quotation, p. 221). Commenting on Williams, who was fifty-five at the time, Seagrave noted on p. 208: "He is ten years older than I am, but he can walk circles around me." Second quotation as cited in Barbara W. Tuchman, *Stilwell and the American Experience in China, 1911–1945* (New York: Macmillan Co., 1970), p. 296.

[9]Quotations as cited in Eric Larrabee, *Commander in Chief: Franklin Delano Roosevelt, His Lieutenants, and Their War* (New York: Harper and Row, 1987), p. 537. See also Romanus and Sunderland, *Mission to China*, pp. 138–48; Jack Belden, *Retreat With Stilwell* (New York: Alfred A. Knopf, 1943), pp. 259–368; Joseph W. Stilwell, *Stilwell Papers*, arr. and ed. Theodore H. White (New York: William Sloane Associates, 1948), pp. 95–106.

Seagrave hospital and ordered it to India's Assam Province to aid the British in caring for the refugees, mostly laborers who had worked in Burma or served the British administration there. In light of the crisis just endured, he now knew that before an effective reconquest of Burma could begin, the Chinese Army medical service must be completely reorganized and retrained. The defeat had left both Williams, who would become Chief Surgeon, USAFCBI, in July, and Stilwell free of illusions about the job that faced them in the theater. They had learned positive lessons as well; they knew the terrain from walking it and the people who had been their companions in misfortune.[10]

Preparing To Counterpunch

Substantial numbers of American air and service forces arrived in the CBI during the months that followed the fall of Rangoon. Their missions were to expand and protect air communication with China; to begin constructing the Ledo Road, which was to replace the Japanese-held section of the Burma Road; and to reorganize, train, and supply the Chinese armies for the reconquest of Burma.

General Stilwell established a rear-echelon headquarters at New Delhi in July and kept an advance echelon in Chungking—the latter an ugly bomb-battered provincial town that was crowded by refugees and the wartime government of China. At the end of 1942 Stilwell ordered Colonel Williams to the forward headquarters, assigning him the task of guiding medical training and care for the Chinese forces in China. At Chungking the chief surgeon set up his office on the rocky palisades that overhung the confluence of the Yangtze and the Chia-ling Rivers. For the Chinese troops in India, a vacated prisoner-of-war camp at Ramgarh became a training ground; the Seagrave hospital, the remnants of the Chinese field medical units, and the 98th Station Hospital, a small unit of fifty beds, provided support. Here Chinese medical personnel heard lectures and received technical training as they performed hands-on work among the patients.[11]

Meanwhile, the American military structure that was to support and assist the Chinese took form, with its own medical system. Col. John M. Tamraz, MC, became surgeon of the United States Army Services of Supply (USASOS) and Col. Hervey B. Porter, MC, the surgeon of the Tenth Air Force (one of the two tactical air commands in the theater). Lt. Col. Thomas C. Gentry, MC, served as surgeon of Brig. Gen. Claire L. Chennault's American Volunteer Group (Flying Tigers), a force of volunteer pilots that predated America's entry into the war and was later absorbed by the theater air forces.

In New Delhi Colonel Tamraz concentrated on the problems of medical supply and hospitalization, support for the Ledo Road construction crews, and the care of air force service personnel in India. As in the Pacific theaters, his sub-

[10]Stone, "Medical Service in India and Burma," 1:19–21, Ms 8–6.2 AG, CMH; Seagrave, *Burma Surgeon*, pp. 240–41.

[11]Stone, "Medical Service in India and Burma," 1:27, 39, 69–72, Ms 8–6.2 AG, CMH; Blanche B. Armfield, *Organization and Administration in World War II*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963), pp. 508–09, 514. See also Romanus and Sunderland, *Mission to China*, pp. 192–221.



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ordinates were dispersed in order to support similarly fragmented small garrison and service units in the Indian port cities, along the line of communications, and among the Assam airfields. With bed strength keyed to U.S. forces, the hospitals were obliged to support the Chinese as well—a built-in deficit that the War Department, in response to theater protests, corrected too late to provide adequately for the bitter fighting of 1943–44.[12]

Like Williams a long-service Regular Army officer, Tamraz apparently proved less able than the theater surgeon to adapt to his new responsibilities. According to his historical officer, Lt. James H. Stone, he displayed a preoccupation with routine, a fixed attention to niggling detail, and a suspicion of his superiors that did little to improve an inherently difficult situation. The two headquarters echelons were 2,100 miles apart—enough to ensure that the USASOS surgeon would act with considerable independence and also in substantial isolation both from Williams and from the front. Stone recorded that "on a quiet day the disappearance of a routine memorandum could provoke [Colonel Tamraz] as much as a telegram reporting that a supply ship had been sunk. The arrival of a Regular Army friend from peacetime days was as notable as the opening of a new supply depot in Calcutta." Tamraz traveled much, but seemed to draw from his inspection trips chiefly enjoyment of his status as a USASOS celebrity, returning unenlightened about the problems of his subordinates.[13]

The CBI's medical difficulties were varied, and began with basics: the disease environment of India and the effects of jungle warfare. In 1943 the theater counted among its 75,000 American soldiers over 8,000 admissions for malaria, almost 7,000 for alimentary disorders, about 2,600 for venereal disease, and 1,150 for dengue. Though malaria control units arrived in the early part of the year, control could not be sat-

[12]Stone, "Medical Service in India and Burma," 1:27–61, Ms 8–6.2 AG, CMH; Armfield, *Organization and Administration*, pp. 509, 512, 514. On the American Volunteer Group, see Russell Whelan, *The Flying Tigers: The Story of the American Volunteer Group* (New York: Viking Press, 1943). Other doctors, nurses, and technicians associated with the group are listed in the appendixes to Whelan's volume.

[13]James H. Stone, comp. and ed., *Crisis Fleeting: Original Reports on Military Medicine in India and Burma in the Second World War* (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1969), pp. 135–39 (quotation, p. 137).



ANTI-MALARIA EFFORTS IN INDIA'S ASSAM PROVINCE

isfactorily established over vast areas, in part heavily populated by an infected people and in part covered with almost impenetrable jungle. DDT did not become available until the end of 1944, about a year after theaters with a higher priority status for supplies; Atabrine was available only in the combat zone, forward of Ledo, and was viewed with suspicion by Williams until he became convinced of its effectiveness in 1944. A rigorous full-scale anti-malaria campaign was not undertaken until late 1944, when it had become evident that the 1943 rate of 183 per 1,000 troops per year had been reduced to only 166 by previous efforts.[14]

Psychiatric problems were common in the theater, for the unfamiliar and often hostile environment demanded radical adjustments from the Americans who served there. But the theater had only four psychiatrists at the end of 1943 and twenty-one at the end of the war, serving by then almost 200,000 troops. Because all the psychiatrists worked at general hospitals, stress reactions in forward units received treatment so late and so far from the front lines as to be useless. In short, preventive psychiatry did not exist during the time when it was most needed. A psychiatric consultant did not arrive in New Delhi until January 1945, and endeavored to

[14]Herrman L. Blumgart and George M. Pike, "History of Internal Medicine in India-Burma Theater," p. 35, file 314.7–2, HUMEDS, RG 112, NARA; Armfield, *Organization and Administration*, pp. 533–34; John W. H. Rehn, "China-Burma-India Theater," in Ebbe Curtis Hoff, ed., *Communicable Diseases: Malaria*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963), pp. 347–98.

upgrade service and provide care farther forward. The lack of statistics, however, makes any assessment of his success or failure impossible.[15]

In 1944 the number of cases of diarrheal diseases was serious enough to impair efficiency, probably three times the officially recorded 16,562 cases. Even the recorded cases served to give the CBI the highest rate for all theaters in World War II. The rate peaked at 326 per 1,000 troops per annum in July, and did not decline significantly until the following year (*Chart 6*). Such ills were pervasive in India and seemingly unconquerable, given the climate, crowding, local mores, and native food-handlers. The burden on the Veterinary Corps officers who inspected the Army's food and supervised slaughterhouses was a heavy one. Immunizations successfully kept the serious diseases of cholera, typhoid, and typhus from endangering American troops, and a rigorous anti-VD program, inaugurated by Williams at the end of 1942 and aided late in the war by the introduction of penicillin treatment, ultimately reduced the level of infection to the lowest for any theater of operations. Nevertheless, both medical and command leadership in the CBI were generally sluggish in guarding the health of the Army there. As the Army's official history of the theater concludes, "Preventive medicine did not come into its own in [the CBI] until the winter of 1944–45."[16]

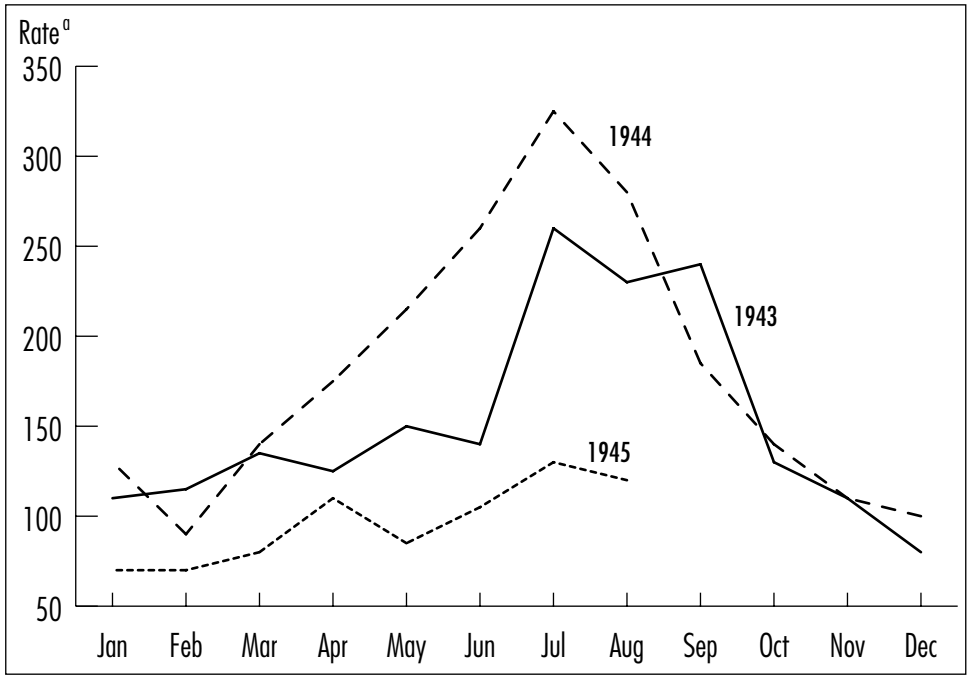
The major responsibility of the USASOS headquarters was to construct a new land route to China—the Ledo Road—from India's Assam Province through the northern Burma jungles to a junction with the old Burma Road. Work began in March 1943 and ended triumphantly in January 1945, when the first truck convoy set out for China. To achieve this remarkable feat of engineering—building a roadway through jungle and mountains in the midst of war and in the face of an active enemy—required the labor of thousands of Americans and tens of thousands of Chinese and Indians.

Battalion and regimental medical detachments provided first-echelon care. Colonel Tamraz established a complex of fixed hospitals and battalion aid stations in the Ledo base area. Operating the aid stations was the responsibility of the 151st Medical Battalion. Spaced a hard day's march apart, the stations were small, each containing a few enlisted medics and sometimes a doctor who worked for a time and then moved on. Living in *bashas* (bamboo huts), the medics endured heat, rain, insects, and boredom, compensated in part by the natural setting of green mountains and the distant snow-capped Himalayas. How much pleasure the homesick and the lonely

[15]Donald B. Peterson, "China-Burma-India Theater," in Albert J. Glass, ed., *Overseas Theaters*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1973), pp. 830–31; John R. Mays, "History of Neuropsychiatry in the India-Burma Theater in World War II," pp. 2–5, 12–14, 17, file 314.7–2, HUMEDS, RG 112, NARA. Mays, apologizing for the lack of meaningful statistics, indicates that a statistical section organized in the theater surgeon's office began to function satisfactorily only in June 1945.

[16]Frank R. Philbrook and John E. Gordon, "Diarrhea and Dysentery," in Ebbe Curtis Hoff, ed., *Communicable Diseases Transmitted Chiefly Through Respiratory and Alimentary Tracts*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1958), pp. 376–78; Charles F. Romanus and Riley Sunderland, *Stilwell's Command Problems*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1956), pp. 287–88 (quotation).

CHART 6—DIARRHEA AND DYSENTERY INCIDENCE IN U.S. ARMY FORCES, CBI, 1943–1945



[a]Reflects the number of new admissions plus secondary diagnosis cases per annum per 1,000 troops.

Source: Adapted from Herrman L. Blumgart and George M. Pike, "India-Burma Theater of Operations," in W. Paul Havens, Jr., ed., *Activities of Medical Consultants*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1961), p. 712.

derived from their surroundings is another matter. Probably most would have agreed with Sgt. Robert W. Fromant's sentiments, written on the evening of 13 August 1943: "The sun was out most of the day and tonite [*sic*] the moon is beautiful. Oh for home, a car & freedom."[17]

Medical support for the Army Air Forces meant providing fixed hospitalization for the crews and ground personnel of the Tenth Air Force, as well as supplies for the dispensaries maintained by air force personnel at bases in India. On 10 March 1943 the theater activated the Fourteenth Air Force in China under Chennault, who was promoted to major general on the fourteenth. Here too Chennault sought to establish a dispensary at every base, and in October the USASOS surgeon established the 95th Station Hospital at Kunming. Meanwhile, in August the theater command Army Air Forces, India-Burma Sector—comprehending the Tenth Air Force, the Air Service Command, and the Air Forces Training Command—was established at New Delhi, with its medical section successively headed by Colonel Porter, in October by Col. William F. DeWitt, MC, and in May 1944 by Col. Clyde L.

[17]Fromant's log in Stone, comp. and ed., *Crisis Fleeting*, pp. 32–34 (quotation).

Brothers, MC, a former Tenth Air Force surgeon. The air surgeon's staff was minimal, and various air organizations, including the Air Transport Command's India-China Wing and the XX Bomber Command, set up in 1944 to initiate the strategic bombing of Japan from bases in mainland Asia, were outside of his commander's authority. These organizations dealt directly with the air surgeon in Washington and the theater surgeon in Chungking.

So fractured a system seemed unlikely to offer harmony among the many air surgeons, the theater surgeon, and the USASOS surgeon. If anything, the multiplication of theater headquarters loosened central authority. Instead of a two-sided conflict between the Army Air Forces and the theater, the result appears to have been free-form competition among the various air surgeons for medical materiel and hospital space, both of which were in short supply. Relationships with the USASOS headquarters were defined by a variety of makeshift agreements. Only in the fall of 1944, when the offices of theater surgeon and USASOS surgeon were consolidated and increased numbers of hospitals received, did friction diminish and more centralized control bring greater orderliness to the support of the theater's airmen.[18]

Medical supply was poorly handled by the theater, though the complications that underlay the problem were not of its making. Supplies for American troops arrived from the United States in the familiar form of medical maintenance units. American-sponsored Chinese troops in China received lend-lease supplies from the United States through the China Defense Supply Program, established by Congress; Chinese troops in India were supplied by the British under lend-lease agreements, which the United States managed on behalf of China. Secondary suppliers included the Chinese Army Medical Administration and China's National Health Administration and National Red Cross Society. Nongovernmental aid came from the United States via the American Red Cross, the Bureau of National Aid to China, and the United China Relief. Colonel Williams had some success coordinating his multiple sources, to a great extent through personal contacts with their representatives, but less in maintaining liaison with his own subordinate commands.

In December 1942, while Colonel Tamraz was away on an inspection tour, the chief surgeon transferred the USASOS supply officer from New Delhi to Kunming. When Tamraz returned, he appointed his dental officer to the vacant slot. Inexperienced and lacking supervision from the USASOS surgeon, the new supply officer performed poorly, allowing critical stocks to dwindle without requisitioning replacements, probably through misunderstanding of a War Department order that terminated the automatic system in September 1943. The following month Tamraz relieved him and requested a supply expert from the United States, who,

[18]Surg, 14th Air Force, Annual Rpt (copy), 1943, pp. 1–3, file 319.1–2; Surg, 10th Air Force, Annual Rpts (copies), 1943, p. 1, and 1944, p. 1, file 319.1–2; James H. Stone, "The Hospitalization and Evacuation of Sick and Wounded in the Communications Zone, China-Burma-India and India-Burma Theaters, 1942–1946," pp. 156–59, file 314.7–2; Surg, China Air Svc Cmd, Annual Rpt (copy), 1944, pp. 1–2, file 319.1–2. All in HUMEDS, RG 112, NARA. See also Mae Mills Link and Hubert A. Coleman, *Medical Support of the Army Air Forces in World War II* (Washington, D.C.: Office of the Surgeon General, USAF, 1955), pp. 876, 902–07; Armfield, *Organization and Administration*, p. 525.

arriving in December, found inventories far below authorized levels. But distance and time—two of the theater's most persistent enemies—prevented him from restoring safe levels until mid-1944.[19]

Such mismanagement was especially unfortunate because of the theater's many built-in problems, including its geographical remoteness and its position at the bottom of the War Department's priority list. Because gasoline and ammunition took precedence, medical supplies failed to reach China in sufficient quantities; in January 1944 the supply depot at Kunming complained that it had received none since November 1943. The Allies were also a problem. The British filled only 25 percent of their obligations to the Chinese armies, compelling the diversion of American supplies to their use. The Chinese consumed medical supplies at a rate of 228 percent of the expected norm, and by December 1943 they had exhausted even stocks of some common items like iodine. In 1944 failure to fill air force requisitions led to complaints to the air surgeon in Washington. He turned to the surgeon general, who dispatched Colonel Voorhees, his troubleshooter, in June to inquire into the problem.

Colonel Voorhees in turn catalogued a list of failings that included unqualified people in key positions, an unsatisfactory requisitioning system, failures in depot operations, lack of centralized authority, and absence of any clear definition of responsibilities. Voorhees also proposed solutions that, in combination with the overhauling of the theater command itself, resulted in marked improvements during 1944.[20]

While the supply system expanded in space and declined in quality, the job of reconquering Burma languished. Lacking troops, time, and Allied agreement on objectives, Stilwell put aside his first plans for a counteroffensive in 1942. In the spring of the following year, however, the Allies agreed to invade Burma in the fall, clear the Japanese from northern Burma, construct the Ledo Road, and eliminate Japanese air bases in order to protect and shorten the air route to China. The American and British air forces would undertake a supporting campaign to win control of the skies. Meanwhile, at the Ramgarh training center Stilwell organized three Chinese divisions into the so-called X-Force; at the same time, twenty-seven divisions were organized at Kunming and designated the Y-Force.

Williams, then still in India, conceived of somewhat grandiose plans, whereby medical support for the X-Force would be via an elaborate system modeled on a contemporary U.S. Army corps. When these failed to materialize, a new plan was devised in 1943, tailored to the theater's deficient resources. Tamraz' USASOS headquarters would continue to support the road-building operations slated to proceed concurrently with the fighting, and would also provide for evacuation and fixed hospitalization. Combat forces would meet

[19]James H. Stone, "Organization and Development of Medical Supply in India and Burma, 1942–1946," pp. 1–3, 39–41, 56–60, file 314.7–2; Memo (copy), Col Tracy S. Voorhees et al. to CG, USAF, CBI, 25 Jul 44, sub: Medical Supply in CBI, p. 1, in Medical Supply, CBI, Extracts, file 333. Both in HUMEDS, RG 112, NARA. See also Romanus and Sunderland, *Mission to China*, pp. 13–14, 26.

[20]Stone, "Medical Supply in India and Burma," pp. 106–33, file 314.7–2; Memo (copy), Voorhees et al. to CG, USAF, CBI, 25 Jul 44, p. 2, in Medical Supply, CBI, Extracts, file 333. Both in HUMEDS, RG 112, NARA.

first- and second-echelon medical needs, with Chinese units reinforced by U.S. Army medics to handle complex surgery. Later, as the reconquest advanced deep into Burma, mobile hospitals requisitioned from the United States would support the fighting forces, and the USASOS fixed hospitals would become a fourth echelon.

However, the lack of personnel and units ensured that medical support would be both unconventional and sparse. Fixed hospitals included not only two general hospitals but also three evacuation hospitals. Attempts to use evacuation hospitals in the customary manner, as mobile units, failed because tentage was lacking, construction in the war zone was difficult, and casualties were too many. Williams sought field hospitals to support the fighting forces, but of the twenty-five he requisitioned he received only five during 1943. Judging the Southwest Pacific Area's portable surgical hospitals appropriate for the primitive jungled regions of northern Burma, he requested eighteen but received six, and those only after the campaign had been under way for months. Even when the portables moved to the front, they had an abundance of pediatricians, general practitioners, and obstetricians, but a minimum of trained surgeons.

So many improvisations and so much hope and guesswork went into medical planning that a knowledgeable officer wrote that the medical service "resembled a suit of clothes worn by a stepchild in an old fairytale," a patchwork made from the leftovers of theaters that were richer and better endowed.[21]

With such resources, the Americans sought to support an ally that lacked almost everything. As Williams and Tamraz both discovered, reforming the Chinese Army medical service was a disheartening job. The problem began with leadership and supply. Pay was abysmal and racketeering pervaded the officer corps. The ration was wholly inadequate, and vitamin and protein deficiencies were common. Disease ran rampant: In one Chinese division in India a survey found that 90 percent of the personnel suffered from deficiency diseases, half from chronic dysentery, and a quarter from malaria. Peasant conscripts were profoundly ignorant of sanitation and their army made no effort to enlighten them.

Medical personnel held low status in the military hierarchy; a line officer who failed to do his duty might be given a stethoscope and made a doctor. Life was cheap in the Chinese forces, at least partly because manpower was abundant in China while almost everything else an army needed was scarce. Any soldier who appeared moribund was simply abandoned to die, his rifle—more valuable than the soldier himself—given to another. Not surprisingly, a Chinese army on the march left "a wake of exhausted and sick and dying soldiers behind."[22]

Those who reached treatment centers were only a little better off. In hospitals Chinese patients threw uneaten food under their beds, spit where they pleased, and urinated just outside the door. Their preventive medicine consisted of devices for warding off demons—

[21]Stone, "Medical Service in India and Burma," 1:39–54, 62 (quotation), Ms 8–6.2 AG, CMH.

[22]Smith, "Chinese Army Medical Service," 1:11–20 (quotation, p. 19), file 314.7, HUMEDS, RG 112, NARA.

for example, pinning a piece of paper money to their sleeves in the belief that evil spirits did not disturb the wealthy. Exploitation by their own leaders sometimes extended beyond death. One division commander received $15 (Chinese) for each coffin that had to be built; after paying off the commander and the hospital superintendent, $2 remained to buy a dead soldier's coffin—and the more who died, the greater the profit. One shocked American medical liaison officer summed up what he saw: "The Chinese Division Medical Service was appalling. There wasn't any."[23]

Complicating a difficult situation was the fact that China possessed an elaborate premodern theory of medicine, as intricate as the humoral theory that had prevailed for thousands of years in the West and as deeply embedded in the culture. With time at a premium, Williams could hardly hope to educate Chinese personnel wholesale in Western medicine, dentistry, and veterinary science. Instead, using as a model the courses given by the Medical Field Service School at Carlisle Barracks, Pennsylvania, the Americans sought to produce a practical system of field medicine, where line personnel as well as medics could be given a rudimentary understanding of evacuation, first aid, and preventive medicine. Williams hoped to form medical detachments for all infantry and artillery units in the X-Force, and a field hospital company for each division.

Crowning the system of training was a fairly elaborate six-month professional course at Ramgarh for junior medical officers, providing a new medical corps of doctors who were given four months of intensive classroom work and two months of internship. Similar centers were later established for Y-Force troops at Kunming and later, when Z-Force was created, at Kweilin. All had dental sections—an attempt to supply a need for which the Chinese Army made no provision at all. Veterinary medicine, which was essential for an army that depended on animal transport but provided its beasts of burden little or no care, was also taught at Ramgarh.[24]

The work of American and—increasingly, as time went on—of Chinese instructors constituted a major achievement by the theater command and its chief surgeon. If the Chinese were to bear the brunt of the fighting, the Americans had to enable them, as far as possible, to fight a modern war on equal terms. The training mission was not subsidiary but fundamental; the medical side of it provided elementary but crucial knowledge in a theater where pervasive disease made ignorance tantamount to self-destruction. To effectively help others to help themselves was often a thankless and demanding job, requiring tact and understanding of cultural differences in a society where saving face was paramount.[25]

As the time for the planned attack drew close, the X-Force gathering at Ledo was the better prepared in medical terms, though most of its field units were either en route to the theater or unready for combat. The Seagrave hospital, however, was ready to provide support; the USASOS base hospitals had opened and the 151st Medical Battalion was ready to take charge of evacuation; and adequate

[23]Ibid.

[24]Stone, "Medical Service in India and Burma," 1:66–84, Ms 8–6.2 AG, CMH.

[25]Stone, comp. and ed., *Crisis Fleeting*, pp. 74–75, 82–83.

supplies were on hand. In the Y-Force, on the other hand, medical units included only two field hospitals, whose platoons could support no more than six of the twenty-seven divisions. Nevertheless, need for a coordinated attack—the Y-Force was to clear the Japanese from Salween River valley that runs south from China into Burma—demanded that the troops move anyway, with the hope that any new personnel reaching India could be flown across the Hump in time to join the fighting troops in the field. Perhaps significantly, the military plan for the forthcoming battle in northern Burma was code-named STEPCHILD.[26]

Northern Burma

For reasons of his own, Chiang Kai-shek held the Y-Force immobile until May 1944 and the battle for Burma was fought by the X-Force and by British, Indian, and West African troops under England's Lt. Gen. William J. Slim. The fight was two-sided. While the Allies attacked in the north, the Japanese attacked in the south and in the center, against Imphal. Their entanglement in India enabled Stilwell to amass a great advantage in men and air power and made his victory possible. From beginning to end, Allied control of the air was decisive, for without it neither supply nor evacuation would have been possible.[27]

The struggle that was to drive the Japanese from northern Burma began in October 1943, when the Chinese 38th Division's 3d Battalion, 112th Regiment, providing security for the Ledo Road construction, collided with Japanese troops just beyond the town of Shingbwiyang. Surprised by the enemy, the Chinese bogged down, taking heavy losses. The Seagrave hospital split into three sections and gave basic support to three Chinese battalions, which quickly became isolated from one another.

A period of several months' stalemate followed, marked by frustration among the American leadership and by heavy patrol action in the jungle. Medics learned to practice their art under jungle conditions. Lacking orthopedic equipment, they devised fracture tables of bamboo and parachute ropes to suspend casualties in traction while the doctors worked. A camp stove, a bamboo frame, and a tarpaulin formed a hutch for warming the wounded who were chilled or in shock. Evacuation from one Seagrave unit to Shingbwiyang involved a litter carry of no less than 25 miles, and the Americans viewed with amazement the Chinese litter-bearers who could cover the distance at a jog trot, pausing only twice for rest.[28]

Provisional surgical teams drawn from USASOS hospitals reinforced Seagrave, learning much of frontline service in the process. One such team of two officers and twelve enlisted men departed the comparative comfort of the 73d Evacuation Hospital at Ledo on 20 October, rode by truck to Shingbwiyang, and then hiked forward over a steep slippery trail that was soaked by frequent rains and marked by the skeletons of refugees who had perished in 1942. Aided by Nepalese porters and protected

[26]Stone, "Medical Service in India and Burma," 1:60–61, Ms 8–6.2 AG, CMH.

[27]Ibid, 1:97–98, Ms 8–6.2 AG, CMH; Field Marshal Viscount William J. Slim, *Defeat Into Victory* (New York: David McKay Co., 1961), pp. 214–44. On operations in northern Burma, see Romanus and Sunderland, *Command Problems*, pp. 129–293.

[28]Stone, "Medical Service in India and Burma," 1:101–02, 105–07, Ms 8–6.2 AG, CMH.

by Chinese soldiers, the trekkers, after a journey of three weeks, reached Seagrave's surgery at Wang Ga. Then they moved forward again, finding the Chinese 3d Battalion, 112th Regiment, at last dug into a defensive position at Ngajatzup, from which its officers refused to budge.

Here the only Medical Department casualty, T. Sgt. 4 Ronald M. Brown, was killed in an ambush. The Chinese abandoned his body, along with several of their own wounded, despite the plea of an American medical liaison officer that he be allowed to kill the helpless men painlessly with lethal doses of morphine. Then for three months the remaining members of the team worked in a dugout within the battalion perimeter, on a wooded hilltop surrounded by a defensive system of trenches, booby traps, and sharpened stakes.

Medical supplies as usual were airdropped. Parachutes were turned into sheets, blankets, towels, and lining for the dirt walls of the medical dugout. Gasoline cans of boiling water served as sterilizers, and flashlights illuminated nighttime operations. The medics dissolved dry plasma in distilled but unsterile water, and made no attempt to sterilize dressings or surgical drapes. Yet casualties, despite febrile reactions to the plasma, survived; most wounds healed without infection, though two abdominal cases died. Basic medicine and antiseptic surgery, aided by doses of oral sulfathiazole, enabled the Chinese to survive a lengthy siege in a jungle environment. In January 1944 a Chinese regiment of the 22d Division broke through, and the team members returned to well-merited decorations for their service under fire.[29]

The advance resumed as the Chinese, under Stilwell's direct leadership, began to move down a chain of valleys, at whose southern end lay the town of Mogaung, which was on the railroad line connecting Mandalay with Myitkyina. The commander now had in the field some 50,000 Chinese in two well-trained and competently led divisions, while a third continued to train at Ramgarh. A British deep-penetration force, the famous Chindits under Maj. Gen. Orde C. Wingate, operated behind enemy lines. The invaders had valuable allies in Shan and Kachin tribesmen, who loathed the Burmese and supported the Allies.

Stilwell also had an American unit of 3,000 troops, under Brig. Gen. Frank D. Merrill. The 5307th Composite Unit (Provisional), code-named GALAHAD, was a volunteer regiment soon to gain renown as Merrill's Marauders. Operating on the left flank of the Chinese, the Marauders struck at the Japanese rear. They traversed jungle trails that plunged into deep valleys and climbed precipitous slopes, carrying their supplies on mules and horses and replenishing by airdrops.[30]

American medical units that had arrived in the theater during late 1943 supported the Chinese—the 25th Field Hospital; the 42d, 43d, and 46th Portable Surgical Hospitals; the 13th Medical Battalion; and the 803d Medical Air Evacuation Transport Squadron. The portables, long awaited, proved a key to the creation of a functional field medical system under Burmese conditions. As on the islands of the Pacific, they assumed

[29]Ibid., 1:104–05, 107, 109–12, Ms 8–6.2 AG, CMH.

[30]Ibid., 1:127–28, 145, Ms 8–6.2 AG, CMH; idem, comp. and ed., *Crisis Fleeting*, p. 294; Romanus and Sunderland, *Command Problems*, pp. 129–31, 196.

many roles besides that of rendering frontline surgery. They functioned at times as collecting stations, as clearing stations, as holding units at jungle airstrips, and as medical supply points. The USASOS headquarters by late 1943 probably disposed of over 10,000 beds deployed from Karachi to Ledo, including expansion beds. The main forward concentration at Ledo—the 20th General Hospital and the 14th, 48th(-), and 73d Evacuation Hospitals—had 3,250 authorized beds (*see Map 11*). Linking the fixed hospitals to the front was the 151st Medical Battalion.[31]

But the system did not reach all who needed it. Because evacuation followed the main axis of the advance, units on the extreme left and right had great difficulty in sending out their casualties. GALAHAD, during its deepest jungle marches in the late winter and early spring of 1944, lacked any medical service at all except that of its own battalion detachments. And Chinese forces on the right flank fared only a little better. A surgical team accompanying the Chinese 22d Division's 1st Battalion, 65th Regiment, marched through deep jungle, over 3,000-foot ridges, drawing its supplies from occasional airdrops, which were seldom sufficient. On one occasion, when resupply failed for three weeks, surgeons were reduced to borrowing knives and saws from the native Kachins. Indeed, the Kachins made success and even survival possible; they provided food, shelter, guides, and litter-bearers, and without them the American medics on the far right flank would have been "absolutely helpless."[32]

As the Chinese began to advance, a pattern of treatment and evacuation quickly emerged. Casualties passed through the hands of Chinese battalion and regimental detachments to American surgical teams and then, often via Seagrave detachments, to the 25th Field Hospital. They were moved by litter, or by litter jeep when roads were available, to forward airstrips, where a holding unit—called an air clearing station—cared for them until evacuated to Shingbwiyang or, for the most serious cases, to Ledo. Seagrave's evacuation policy was about ten days; that of the field hospital, six weeks.[33]

As the Chinese gained confidence under Stilwell's aggressive leadership, their performance in the field improved markedly, as they pressed the Japanese down the Hukawng and Mogaung Valleys. Anvil to the Chinese hammer, the Marauders fought four battles, at Walawbum, Shaduzup, Inkangahtawng, and Nhpum Ga. Hard fighting, combined with months of marching through steamy leech-ridden jungle and over towering ridges, brought them close to exhaustion.

Medicine and Marauders

Although the fate of the Ledo Road rested on the Chinese armies, the adventures of the Merrill's Marauders formed the American epic of the Central Burma Campaign. In their long trek to Myitkyina all of the pressures of

[31]Stone, "Medical Service in India and Burma," 1:122, 133–34, 144, Ms 8–6.2 AG, CMH; Romanus and Sunderland, *Command Problems*, pp. 142, 285. The 151st Medical Battalion had been trained for desert; the 13th Medical Battalion, for the Arctic. The latter unit was redesignated 13th Mountain Medical Battalion on 7 November 1944.

[32]Stone, "Medical Service in India and Burma," 1:131, 144–45 (quotation), Ms 8–6.2 AG, CMH.

[33]Ibid., 1:141–44, Ms 8–6.2 AG, CMH.



EVACUATING CHINESE CASUALTIES ON A C–47

jungle war beset the regiment—exhaustion, disease, the invisibility of the enemy. As a Marauder who became the unit's eloquent historian wrote, "It would not be enough to say that . . . [the march] was the worst experience I have ever been through. It was so incomparably the worst that at the time I could hardly believe in the rest of my life at all."[34]

A volunteer outfit of mixed and dubious antecedents, the Marauders to their own misfortune were the only American force under Stilwell's command—indeed, the only American land combat force between North Africa and New Guinea. From the beginning they were a hard-luck crew, nursing real and imagined grievances and cultivating the air of desperation and rascality that caused journalists to award them their sobriquet.

Formed as a result of transient enthusiasm for deep-penetration forces engendered by Wingate, the regiment was divided into three battalions and each battalion into two combat teams. The Marauders were to depend upon air supply and evacuation, on the model of Wingate's Chindits; artillery support was lacking. Even when they arrived in India in late 1943, the soldiers, many drawn from other tropical theaters, had a malaria rate of 4,084 per 1,000 per year; only Atabrine discipline enabled them to fight. Yet they were not without experience. Their training under Merrill was rigorous, and when Stilwell first saw them at the Burmese town of Shingbwiyang on 21 February 1944, he

[34]Charlton Ogburn, Jr., *The Marauders* (New York: Harper and Brothers, 1959), p. 5.


TIBET
NEPAL
100th Station Hospital
New Delhi
Agra
97th Station Hospital
Advance Medical Depot 1
99th Station Hospital
Gaya
Karachi
181st General Hospital
INDIA
48th Station Hospital (-)
Ramgarh
Calcutta
112th
Bombay
Provisional Hospital
ILLUS
MA
LI
Bay of Beng
Indian Ocean
CEYLON

MAP 11


CBI FIXED HOSPITALS AND DEPOTS
December 1943
Scale 1:18,600,000
Note: Evacuation hospitals used as fixed facilities.
Advance Medical Depot 2
111th Station Hospital
Chabua
Ledo
BHUTAN
14th Evacuation Hospital
48th Evacuation Hospital (-)
73d Evacuation Hospital
20th General Hospital
LEDO ROAD
C H I N A
BURMA ROAD
Myitkyina
Imphal
Kunming
Kueilin
Advance Medical Depot 3
95th Station Hospital
Advance Medical Depot 4
Provisional Hospital
Station Hospital
Lashio
Mandalay
FRENCH
INDOCHINA
B U R M A
Rangoon
THAILAND
Andaman Sea
Gulf of Thailand

viewed them with approval: "Tough looking lot of babies."[35]

Medical support appeared adequate. Under regimental surgeon Maj. Melvin A. Schudmak, MC, the medics shared the hardships of the Marauders, enduring constant rain, eating their own animals when airdrops failed to materialize, and suffering skin diseases, malaria, dysentery (one outbreak cost battalion members an average weight loss of 25 pounds, per man), and scrub typhus. Clearly inadequate to the Marauders' needs were the chlorine purification tablets that formed their only means of combatting polluted water. No means of preventing scrub typhus could be provided them, for no vaccine existed. Compounding their suffering was a sense of heartless misuse and indifference by Stilwell, whom they felt ought to have understood as a commander in a theater that was neglected by Washington.

Rapid motion preserved the Marauders from some diseases—they left their own wastes behind, though they may have infected one another with malaria—but the effects of exhaustion multiplied throughout their march of 700 miles. Marked by symptoms of dizziness, lack of muscle tone, anorexia, and nausea, the attrition of the trail was inexorable despite adequate salt and vitamin intake. Merrill himself eventually went down with a heart attack. Atabrine discipline slipped as morale deteriorated and exhaustion increased; perhaps some Marauders saw malaria as the only ticket out of the jungle.

Clashes with the enemy left the medics many wounded to care for, while the nature of deep penetration ensured that no regular chain of evacuation could be maintained. On occasion, the lightly armed special operations force was obliged to fight as line infantry. Early in April a Japanese attempt at counter-envelopment trapped the 2d Battalion for ten days on a barren hilltop near Nphum Ga; artillery fire hammered the defenders, who could not reply in kind. Medical and sanitary problems were acute, as always during a siege. Water was scarce and polluted by feces, dead animals, and human corpses; the stink of decay hung over the perimeter and a plague of flies beset its defenders. When relief arrived, casualties had to cross 6 miles of mountain trail by foot, litter, or horseback to a rest camp at Hsamshingyang, where casualties, some of whom had been wounded ten to twelve days before, slept on the ground or in parachute tents. By then dysentery was rampant, and impossible to control with sulfaguanidine or paregoric.[36]

Throughout the march medical treatment was elementary and evacuation prolonged. Battalion medical detachments moved with the Marauder columns; cared for the sick; collected the wounded and gave first aid; and, during fights, set up aid stations. When the march resumed, casualties walked if they could, rode pack animals, or were carried in litters until they recovered or

[35]Stone, "Medical Service in India and Burma," 1:119–21, Ms 8–6.2 AG, CMH; idem, comp. and ed., *Crisis Fleeting*, p. 295 (quotation).

[36]13th Mountain Med Bn Annual Rpt (copy), 1944, pp. 9–10, file 319.1–2; 896th Clearing Co [Seagrave hospital] Annual Rpt (copy), 1944, pp. 3–5, file 319.1–2; Rpt Extracts on Activities of U.S. Army Medical Department Units Assigned to Northern Combat Area Command During the Northern and Central Burma Campaigns, "Hospitalization," p. 2, Historians files. All in HUMEDS, RG 112, NARA. See also Stone, "Medical Service in India and China," 1:150, Ms 8–6.2 AG, CMH; idem, comp. and ed., *Crisis Fleeting*, pp. 305–21. It should be noted that Stilwell used the Chindits with similar ruthlessness and similar effects.

until air evacuation came to the rescue. Stabilizing emergency surgery was provided briefly by a small surgical team of the 13th Medical Battalion and, on the final leg of the march to Myitkyina, by a Seagrave hospital team. Lack of consistent surgical support was probably responsible for the fact that more Marauders than Chinese had wound infections when they were hospitalized.

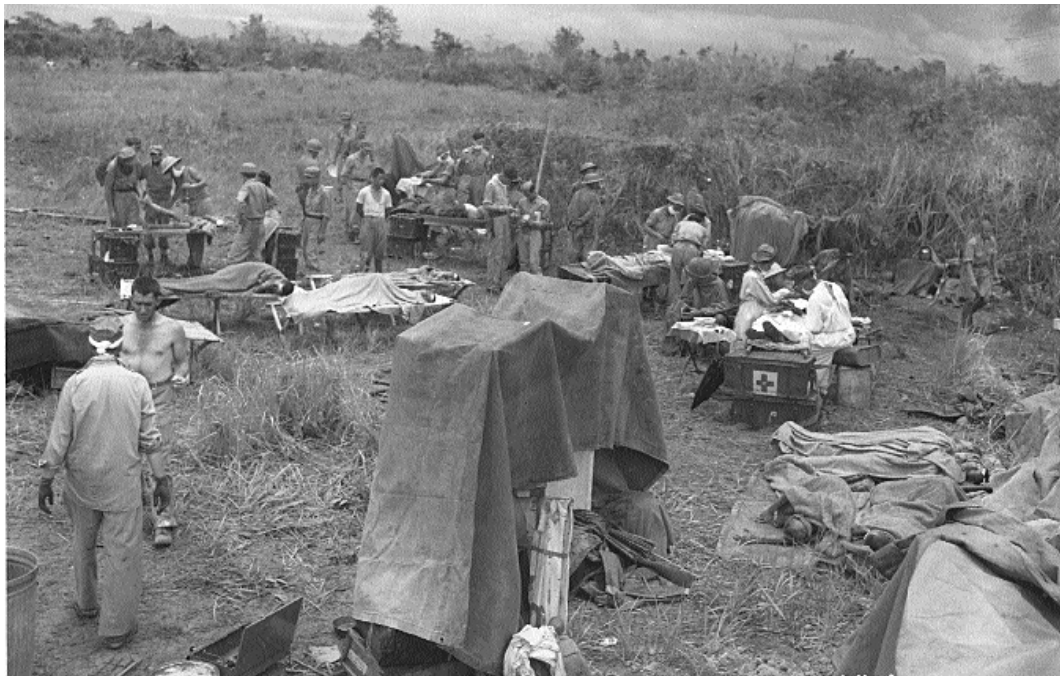
Wingate's forces included several experimental helicopters, and the first American medical evacuation by rotary-wing craft was carried out in April by Lt. Carter Harman, a pilot of 1st Air Commando that supported the Chindits. However, all air evacuation of Marauder casualties apparently was left to light planes that landed in jungle clearings or on the sandbars of jungle rivers. Single-engined L–1s and L–5s shuttled them to landing fields, where they were transferred to two-engine C–47 ambulance planes of the 803d Medical Air Evacuation Transport Squadron. At each stop the air clearing stations cared for those in transit; local troops might staff them, or the 13th Medical Battalion, or, farther to the rear, the 151st Medical Battalion. At each station a medical officer and a handful of enlisted men—nursing orderlies, drivers, litter-bearers, laborers—provided minimum shelter in a ward tent and elementary supportive care. At the end of the long and tortuous route out of combat were the wards of the 20th General Hospital or the 73d Evacuation Hospital at Ledo.[37]

Attrition along the trail was compounded when the weary Marauders were ordered to cross still another range of mountains, descend into the valley of the Irrawaddy, and lay siege to Myitkyina. Though their depleted numbers—now reduced to about 1,300—were strengthened with Chinese units, the siege destroyed the 5307th as an effective force.

The reason was not a lack of medical support, which was more adequate than on the long campaign down the Hukawng and Mogaung Valleys and on the hard march to Myitkyina. On the march the old problems continued—exhaustion, limited medical care, and near-impossible evacuation. But the Marauders of the 1st and 3d Battalions, which had Chinese units attached, benefited from the latter's American surgical support. When the Allies closed in on Myitkyina and the Chinese seized the airfield, the closeness of the forces and the availability of air evacuation and supply both meant better days for the Marauders. Seagrave's medics, though concentrating on the Chinese, served all the injured, working under the fierce midsummer sun of the tropics or under torrential rains that marked the onset of the monsoon.

Thus on 19 May Seagrave's surgeons laid litters across packing boxes under "the scorching sun and squalls of rain." During downpours his Burmese nurses held open umbrellas over the casualties and the attending surgeons. A company of Chinese litter-bearers bravely scoured the field for the wounded. The next day hospital personnel draped parachutes over bamboo poles to form impromptu operating pavilions. The rain continued, impeding air evacuation and aggravating shock in the wounded, who were cold and wet. The 42d Portable Surgical Hospital also took American casualties;

[37]Stone, comp. and ed., *Crisis Fleeting*, pp. 323–25; Peter Dorland and James Nanney, *Dust Off: Army Aeromedical Evacuation in Vietnam* (Washington, D.C.: U.S. Army Center of Military History, 1982), p. 9.



Seagrave Hospital Field and Camp Areas in Myitkyina



on the twenty-fourth a surgical team from the 25th Field Hospital arrived, and on 10 June the 58th Portable Surgical Hospital pitched its tents. As the ring around Myitkyina drew tighter, Seagrave found himself treating American, Indian, British, and Kachin wounded, as well as Japanese prisoners of war. Allowing for the circumstances, care was able; the progress of the Chinese in giving first aid marked a radical improvement in their medical system. Seagrave lost only 3.8 percent of the 4,000 Chinese casualties who passed through his unit, a figure that compared favorably with American hospitals treating their own troops in the Pacific and Europe.[38]

Evacuation was a mixed bag, with some scenes drawn from the twentieth century and others reminiscent of the Civil War. On the battlefield the wounded made agonized journeys to the hospitals over rutted roads in jeeps or in jolting springless oxcarts; many arrived in shock. But evacuation from Myitkyina was incomparably easier than on the jungle march, even though the first ambulance plane, landing on 18 May, was hit by enemy fire and the flight surgeon, flight nurse, and two technicians were wounded. The fact that supply depended entirely upon cargo planes meant that space for returning wounded was always available, even if the dedicated ambulance planes were full. Almost 4,000 casualties—Chinese, American, and British—were flown out of northern Burma during May alone, and for the three months from mid-May to early August three-quarters were said to be evacuees from Myitkyina. In consequence, a delay of four to five days between wounding and reaching hospitals at Ledo that had apparently typified the campaign was reduced to one to two days.

But as the siege progressed, serious conflicts developed between medical and line officers over evacuations. Colonel Williams, as chief surgeon, warned that medical officers were evacuating casualties whose only problem was exhaustion and that line officers, seeking to keep every man they could, sometimes removed tags from those marked for evacuation and ordered them back to duty. A basic reason for the conflict was the condition of the Marauders. For them, by the end of May "the terms 'sick' and 'well' were meaningless." Fifteen to thirty a day were reporting to sick call with scrub typhus, while dysentery was ubiquitous. Of GALAHAD's 2d Battalion, once 564 strong, 12 were left in action on the thirtieth. By the following day all but 13 enlisted men and 1 officer of the 3d battalion had been tagged for evacuation. Several hundred survivors of the 1st Battalion struggled on into June. As the 3d Battalion surgeon reported, "I have never seen so many physically unfit men gathered in one unit."[39]

Stilwell found 2,600 American replacements, throwing service troops and technicians into the battle. "These green soldiers," wrote his political adviser, "were flown into Myitkyina during the monsoon rains and stepped off the transports into a nightmare." They were called NEW GALAHAD; OLD GALAHAD was dying—"just shot," said Stilwell. Of its original 3,000, the regiment had suffered about 2,400 casualties in the

[38]896th Clearing Co [Seagrave hospital] Annual Rpt (copy), 1944, p. 7, file 319.1–2, HUMEDS, RG 112, NARA; Stone, comp. and ed., *Crisis Fleeting*, pp. 346–47 (quotation, p. 346).

[39]Stone, comp. and ed., *Crisis Fleeting*, pp. 349–55 (first quotation, p. 354; second quotation, p. 365).

TABLE 4—5307TH COMPOSITE UNIT (PROVISIONAL) CASUALTY PROFILE, 4 JUNE 1945

Battle Casualties		Nonbattle Casualties	
Killed in Action	93	Deaths	30
Wounded in Action[a]	293	Amebic dysentery	503
Missing in Action	8	Scrub typhus	149
		Malaria	296
		Psychoneurosis	72
		Miscellaneous[b]	950
Total	394	Total	2,000

[a]The figure for wounded in action, which does not account for the lightly wounded who were treated on the line of march and retained with the unit, and the figures for diseases represent the number of cases that were evacuated. Total official casualties equaled 80 percent of the force.

[b]Mostly fevers of unknown origin.

Source: Adapted from Stone, "Medical Service in India and Burma," 1:194, Ms 8–6.2 AG, CMH.

course of the Central Burma Campaign, nearly 2,000 of whom were victims of disease (*Table 4*). At the end of a May only about 600 of the original force remained. The last survivors of OLD GALAHAD were evacuated by 4 June.[40]

Even when the ill and wounded were back in Ledo, the demands of the interminable siege pursued them. The fixed hospitals were overwhelmed, and a convalescent facility, long needed, had only begun to take patients when the casualties from Myitkyina flooded in. The period of the monsoon and the climactic battles passed amid a "kaleidoscopic scene of mud, shortages, malaria, overtaxed equipment, rain, disappointments, heat, language difficulties, shifting priorities, jungle fighting, plans discarded, landslides, and homesickness."[41]

The strain on the system was extraordinary. The theater counted only 8,800 authorized hospital beds, yet in June 1944 12,530 were in use, 7,130 by Americans and 5,400 by Chinese. Tamraz attempted to meet the situation by reducing rear-area facilities and creating new hospitals or expanding old ones at Ramgarh and elsewhere to absorb the influx from the fighting lines. But while the medical service demanded beds, Stilwell's headquarters pressed for the immediate return to the front of all soldiers capable of fighting. For both reasons, U.S. troops newly released but in need of rest and recuperation instead were marked for duty and flung into the replacement system. Soon they found themselves back in Myitkyina—a new item for the Marauders' endless list of grievances against the theater commander and the world in general.[42]

As the siege went on, and throughout the campaign, the Allies were fortunate in the failures of the Japanese medical service. Enemy soldiers suffered from the same diseases, but the incidence was higher. Malaria was all but universal, and supplies of quinine were very low in

[40]Quotations from Louis Allen, *Burma: The Longest War, 1941–1945* (New York: St. Martin's Press, 1984), p. 368. See also Stone, "Medical Service in India and Burma," 1:192, 194, Ms 8–6.2 AG, CMH.

[41]Stone, "Medical Service in India and Burma," 2:254, Ms 8–6.2 AG, CMH.

[42]Romanus and Sunderland, *Command Problems*, p. 286.

northern Burma. Sanitation was poor, never more so than in besieged Myitkyina, and diarrhea and dysentery were common. And, unlike the Allies, Japanese soldiers suffered from malnutrition, with all its attendant ills.[43]

Myitkyina fell at last on 3 August, after a siege of seventy-eight days. The Marauders' story was over. Sickness and exhaustion, not enemy weapons, had destroyed OLD GALAHAD. Accounts by veterans praised most of their doctors, though the regimental surgeon may have been an exception. The real difficulties lay elsewhere. The starved resources of a neglected theater formed a great part of the story, as did the attrition of jungle warfare. Fighting in the CBI differed markedly from the Pacific. Except for guerrilla forces, Allied troops on the islands did not attempt to survive and fight for long periods deep behind enemy lines, and after 1942 the sea became their highway for resupply and reinforcement. Air supply, the only equivalent in the towering forested mountains, provided no equivalent support.

But climate, terrain, theater priorities, and deep penetration alone did not explain the ruin of the unit. The Marauders were called upon to act as the symbol of American will in a theater where the Chinese and British predominated, neither with any strong inclination to the combat in northern Burma that Stilwell's mission demanded. Hence, the commander was constrained, for political reasons, to keep his one American unit fighting beyond the limits of its strength. As the Marauders' historian rightfully suggested, the familiar tag on the sick that read "FUO, meaning Fever of Unknown Origin, . . . might as well have read AOE, or Accumulation of Everything."[44]

The Central Burma Campaign

The new troops who filled the Marauders' ranks were reorganized into the 2d and 3d Battalions of the 475th Infantry, while the 1st Battalion was formed in India from GALAHAD veterans as they were released from hospitals. The regiment was joined by the newly arrived 124th Cavalry. Together, these became the American combat units of the 5332d Brigade (Provisional), or MARS Task Force, which was supported by three portable surgical hospitals and the 18th Veterinary Evacuation Hospital. The Seagrave hospital, though formally activated in October 1944 as the 896th Clearing Company, retained its large civilian complement to help its uniformed personnel provide for the Chinese divisions.

While the American forces were reorganized and the monsoon blew itself out, Stilwell prepared for autumn operations. Initially, the Central Burma Campaign, from the American and Chinese standpoints, served to screen the roadwork by pushing back the Japanese; to the British, it aided the reconquest of their Burmese colony and secured their northern flank. Early Allied goals rapidly expanded in response to early successes.

In mid-October the British 36th Division advanced, strengthened with Chinese elements that were supported by the American 45th and 60th Portable Surgical Hospitals and by elements of the

[43]Rpt, Mil Intel Div, WDGS, 28 Dec 44, sub: The Japanese Medical Record in Burma, 28 Dec 44, file 350.09, HUMEDS, RG 112, NARA.

[44]Ogburn, *Marauders*, p. 232.

13th Medical Battalion. The main Chinese forces moved out with support from three other portables, Seagrave's 896th Clearing Company, and the remainder of the medical battalion. For the time being, the new American brigade, with its three portables, remained at Myitkyina to complete its training. By this time conditions along the chain of evacuation had greatly improved. Disease incidence declined with the onset of the dry season. Beds emptied as battle casualties returned to duty, and fixed hospitals, newly arrived in the theater, began work. No less important, air evacuation was now a "going concern," with a medical air evacuation squadron, established air clearing stations, and a force of light liaison planes. Medically as well as militarily, this would be an entirely different campaign.[45]

Improved mobility on the ground was another plus. During operations in northern Burma, the capture of Mogaung had reconnected the Allies with the railway corridor that ran from Rangoon to Mandalay, Myitkyina, and Lashio. During the last phases of the Mogaung Valley offensive, American planes had dropped jeeps that were fitted with flanged wheels to evacuate casualties on the tracks, and occasional use of these devices had aided evacuation there and at Myitkyina. Rail evacuation became standard in the Central Burma Campaign, and a major supplement to the air evacuation that still dominated the theater.

Cooperation between the British and American medical services also grew steadily. Even in northern Burma American aircraft had evacuated many British casualties. Now ambulances of the 13th Medical Battalion moved British wounded to the battalion's clearing station or to portable surgical hospitals. The 151st Medical Battalion operated an air clearing station for British and Chinese casualties at Sahmaw, where C–47s shuttled to and from airfields in India. And Indian units established a chain of air clearing stations, where the wounded waited at impromptu airstrips, some in dry rice paddies, to be evacuated by American aircraft.

Supplies, too, arrived by air, and a hospital supporting the Chinese at Shwegu underwent a "bombardment" of packages of rice and horse-feed, dropped by supply planes unable to land in the rough country through which the Chinese 22d Division marched to the Irrawaddy. The importance of air evacuation reflected, as usual, the harsh countryside of dense wet jungle and mountain ridges through which the Allies advanced. On the ground the portables again proved themselves indispensable, keeping up with the troops and working in the most varied locations: in a field of smashed gliders, where the British had made a deep penetration landing; in jungle clearings; in buildings perilously close to the front lines, where bullets riddled the walls; and in ancient temples.[46]

Medics found plenty of work, for the Japanese fought sharp delaying battles. Yet their campaign featured planned withdrawals before forces they could no longer hope to best in the field. The Chinese invested the strategic and heavily defended town of Bhamo, on the east bank of the Irrawaddy, and hard fight-

[45]Stone, "Medical Service in India and China," 2:275–81 (quoted words, p. 277), Ms 8–6.2 AG, CMH.

[46]Ibid., 2:281–88 (quoted word), Ms 8–6.2 AG, CMH. See also Annual Rpts (copies), 1944, for 13th Mountain Med Bn, pp. 2–3, 10; 44th Port Surg Hosp, pp. 2–3; 45th Port Surg Hosp, pp. 1–2; and 58th Port Surg Hosp, p. 2. All file 319.1–2, HUMEDS, RG 112, NARA.

ing developed in December 1944 along the Bhamo–Namhkam road and at Namhkam, where Americans of the 5332d Brigade battled for control the ridges overlooking the Burma Road. Bhamo fell in December, and Namhkam in January 1945, bringing Seagrave back to the site of his original mission hospital. The attacking forces now began to meet forward elements of the Y-Force, which had belatedly moved against Japanese forces in south China.

The result was to open both the Ledo Road, renamed Stilwell Road in February, and portions of the old Burma Road running north from Lashio. On 27 January a truck convoy assembled at Myitkyina and rolled across the Chinese border a few days later. Seagrave's surgical teams continued to work, in effect as a mobile evacuation hospital, when the Chinese and the MARS Task Force moved against Lashio. In turn, Lashio fell in March. With British forces advancing in the south, a general collapse of Japanese power in Burma was under way.[47]

Yet the reconquest proceeded without one of the commanders most responsible for its success. A crisis in command—rooted in longstanding conflicts between Chiang Kai-shek and his American chief of staff—had resulted in Stilwell's recall late in October 1944 and the abolition of the CBI. By President Roosevelt's decision, the oversized and undersupported theater was divided in October into two: India-Burma, of which Williams became both chief surgeon and USASOS surgeon; and China, where Col. George E. Armstrong, MC, formerly Williams' deputy, assumed both hats.[48]



COL. GEORGE E. ARMSTRONG, MC

In May 1945 the British forces under General Slim recaptured Rangoon and effectively brought the Burma campaign to an end. Medically, the struggle in central Burma had been far less taxing than that in northern Burma. The portable surgical hospitals worked close to the line regiments; available beds in the 896th Clearing Company and the 25th and 44th Field Hospitals allowed the lightly wounded to be held in the for-

[47]896th Clearing Co [Seagrave hospital] Annual Rpts (copies), 1944, pp. 8–9, and 1945, pp. 1–3, file 319.1–2, HUMEDS, RG 112, NARA.

[48]Charles F. Romanus and Riley Sunderland, *Time Runs Out in CBI*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1959), pp. 8–15; Armfield, *Organization and Administration*, pp. 542, 546. Armstrong later became surgeon general of the Army, serving from 1951 to 1955.

ward zone. Air evacuation cleared serious cases even in the absence of a medical battalion to manage evacuation from the 5332d Brigade, and the fixed hospitals faced no such overload as in the earlier campaign. Though the environment remained hostile, the numbers of sick never became so overwhelming, in part because a malaria control organization now existed, at least in the 5332d Brigade. Nor did the tactical situation, in a winning battle marked by few retreats and no enemy envelopments, preclude evacuation and replacement.[49]

In brief, a time of improvisation and crisis had given way to one of experience and sure-handed competence. Between the fall of Myitkyina and that of Rangoon, however, a critical situation developed in China that demanded an American response.

The Chinese Puzzle

Problems had marked the American experience in wartime China from the early years of the war. In January 1943 Stilwell established the Chinese Training and Combat Command at Chungking, and Williams took on the responsibility of developing medical support for the twenty-seven divisions of Y-Force, which was intended to operate in extreme southern China and northeast Burma. In January 1944, when the Z-Force was set up to train and ready thirty additional divisions at Kweilin for service against the Japanese in southeast China, he assumed responsibilities here also.

Both Y- and Z-Forces, however, were under Chinese rather than American command. Williams' freedom of action was correspondingly limited, and supplies, because of the armies' remoteness from the Indian bases, were even more difficult to obtain than in Burma. But his greatest problem was to impress upon the Chinese Army the importance of maintaining the health of soldiers and upon civilian authorities the importance of maintaining the health of the local populace in those areas where the armies concentrated.[50]

Although Stilwell established a number of training centers in southern China, the prototype for teaching the Chinese the rudiments of military medicine opened in April 1943 at the Kunming training center. Manned by American personnel, the medical school, despite poverty and language barriers, provided both clinical and tactical instruction to hundreds of Chinese medical officers and enlisted men during its bare seven months of existence. Few instructional aids existed; few could be obtained from India, in view of priorities for flights over the Hump. Manikins and charts found in temples had to be pressed into use for illustrating lectures on physiology, anatomy, and first aid. Similar training was conducted at the Tali Medical School, and the two institutions graduated about 1,000 students in all.[51]

American instructors traveled from one Chinese unit to another, to spread their teaching to soldiers in the field, and Americans went on campaigns serv-

[49]Stone, "Medical Service in India and China," 2:330–31, 385–88, Ms 8–6.2 AG, CMH. DDT was introduced into the theater in 1944, but apparently was not widely used until 1945. The vast area and dense jungle canopy made aerial spraying ineffective.

[50]Smith, "Chinese Army Medical Service," 1:42–43, file 314.7; Surg, Chinese Tng and Combat Cmd, Annual Rpt (copy), 1944, pp. 2–5, 13–14, file 319.1–2. Both in HUMEDS, RG 112, NARA.

[51]Smith, "Chinese Army Medical Service," 1:47–56, file 314.7, HUMEDS, RG 112, NARA.

ing as unit advisers on medicine and health. Williams attempted to detail at least one doctor, one enlisted medic, and one veterinary enlisted man to each Chinese division and army. To them fell the difficult task of improving, through diplomacy and tact, the medical and sanitary practices of a civilization far more ancient and deeply rooted than their own. Those who were wise enabled the *I Kuan* (medical officer) to gain face with his commander through quiet instruction and open support; those who were not wise merely aroused resentment by their overbearing ways.[52]

Evacuation had to be organized as well. Collecting posts, division dressing stations, and division and army field hospitals were few in number, inadequately equipped, and thinly staffed. One solution was to assign American field and portable surgical hospitals, and by mid-1944 Williams had been able to provide three of the former and ten of the latter to the Chinese Army. The portables gained the respect of the troops by working far forward, not only saving lives but also enhancing morale among soldiers who now saw (possibly for the first time) evidence both of a commitment and an ability to save their lives if they were wounded.[53]

In April the long-delayed fight to reopen the Chinese portion of the Burma Road began as Chiang's forces crossed the Salween River. Chinese and American medical units were highly integrated. Some portable surgical hospitals were split in two, to provide two surgical teams and double the number of Chinese divisions they could support. Chinese collecting companies brought casualties to the portables, which often evacuated in turn to Chinese field hospitals.

Service with Y-Force in the southern China battlefields was brutal and picturesque. Five portables and 140 pack animals crossed the Salween on a suspension bridge and then climbed rain-slick trails into a range of hills that rose to 11,000 feet beyond. Some pack animals fell into the valleys, and bulls had to be rented and turned into beasts of burden. Weary Americans, exhausted by climbing, heat, and wet, slept in grass huts or within the walls of ancient temples. Here too, in a temple yard, the 32d Portable Surgical Hospital set up on the night of 6 September as the battle for Tengchung, a strategic walled city, raged around it. Casualties were heavy, and American medics were short of plasma. Those in shock seldom survived; all cases of combined chest and abdominal wounds died without exception. Candles illuminated the operating room, and continuous rain prevented resupply by air.[54]

Three field hospitals working on the Salween front divided into separate platoons, each of which supported a Chinese hospital and received its most serious cases. Litter hauls by hard-working coolies were incredibly long, one being recorded of 85 miles; American surgeons by stabilizing severe cases saved an untold number of them who had to make the long journey to the rear. By the end of 1944 American hospitals had admitted close to 20,000 Chinese, more than 13,000 of them battle casualties. Almost 5 percent died in

[52]Ibid., 1:57–58, file 314.7, HUMEDS, RG 112, NARA.

[53]CSurg, USFCT, Annual Rpt (copy), 1944, pp. 4–6; CSurg, USAFIBT, Annual Rpt (copy), 1944, pp. 4–5. Both file 319.1–2, HUMEDS, RG 112, NARA.

[54]32d Port Surg Hosp Annual Rpt (copy), 1944, pp. 3–8; 34th Port Surg Hosp Annual Rpt (copy), 1944, pp. 2–4. Both file 319.1–2, HUMEDS, RG 112, NARA.



MEDICS ADMINISTERING PLASMA TO A Y-FORCE CASUALTY

the hospital, as compared to 3.8 percent during the siege of Myitkyina, a reflection of many factors, including an even more difficult supply situation and the long litter hauls from the front.[55]

While the Chinese made progress on the southern front, the Z-Force trained at Kweilin for an anticipated offensive against the Japanese on China's southeast coast. Under the leadership of Colonel Armstrong a medical school had opened at Kweilin on 1 November 1943, drawing its American faculty from the X- and Y-Forces. Because of inadequate equipment and supplies, the faculty, as before, had to improvise. But the history of X- and Y-Forces, like that of Z-Force, was suddenly transformed by a Japanese offensive that opened in the summer of 1944.

Stung by air attacks launched from Chinese bases, the enemy struck back, driving the Chinese in retreat westward toward Kunming. Threatened by envelopment, the Kweilin Training Center and its medical school closed, never to reopen; the town fell to the Japanese in November 1944. The Americans had trained some 500 Chinese medical officers, 400 veterinary officers and enlisted technicians, and 24 dental officers. Hopes entertained by Williams of supplying Z-Force with American hospitals had meantime gone glimmering, as massive offensives in the decisive theaters of Europe and the Pacific absorbed the medical resources available to the War Department. The forces engaged in Burma and along the Salween had their own needs and could offer no help.

The result was another medical nightmare, reminiscent of Burma in 1942. The retreating Chinese forces were demoralized, their medics lacked adequate training, and most supplies available in the theater remained in storage at Kunming, rather than reaching the troops. American liaison officers sent into the field without supplies could neither treat the wounded nor, lacking vehicles, organize an effective system of evacuation. On 1 October Williams recalled his officers, whom he could ill afford to lose. Halted in December by Chinese ground forces and American airmen, the Japanese

[55]Surg, Chinese Tng and Combat Cmd, Annual Rpt (copy), 1944, pp. 21–24; CSurg, USFCT, Annual Rpt (copy), 1944, pp. 4–6. Both file 319.1–2, HUMEDS, RG 112, NARA.



FRONTLINE SURGERY ON A CHINESE CASUALTY. *A C–47 passes overheard after having dropped supplies by parachute.*

prepared to renew the offensive in the spring of 1945.[56]

Meanwhile, on 27 October General Hsu Hsi Lin, director general of the Chinese Army Medical Administration, approached Armstrong, suggesting that medical training be reconstructed around a system of schools that had been established by the Chinese themselves at Kweilin and Kweiyang. Receiving little support from the Chinese Army, and eclipsed by the Y- and Z-Force training centers, these schools had been limping along. Armstrong willingly provided them such support as he could muster, sending two platoons of the 27th Field Hospital to Kweiyang to operate a 300-bed hospital with personnel of the Chinese school. Together American and Chinese doctors made ward rounds, held staff conferences, and assisted one another in surgical duties. Strictly advisers, the Americans were limited in their ability to effect reforms but encouraged by a doctor draft launched that same October, which began to raise the caliber of the Chinese personnel.

The newly created Chinese Training and Combat Command undertook to train a new 100,000-man army to resist

[56]Surg, Chinese Combat Cmd, Annual Rpt (copy), 1945, pp. 1–2, file 319.1–2; Smith, "Chinese Army Medical Service," 1:121–38, file 314.7. Both in HUMEDS, RG 112, NARA.

the Japanese advance. Armstrong assigned at least one American medical officer to each division. He pulled all available hospitals into southeast China to meet the threat, moving eleven from western Yunnan Province and air-shipping another direct from Burma. Each hospital was split into sections in order to support as many combat units as possible. As they had along the Salween, the Americans took the most serious cases. Units that had been stripped of equipment and personnel for jungle warfare in northern Burma had to be reconstituted and provided motor transport for conventional combat in China. With few larger American hospitals to serve as backup, the portables had to be capable of handling complex surgical and medical problems as well, and had to do it without special equipment that was denied the theater by the surgeon general's office. As usual, theater forces went into battle armed with expedients and hope.[57]

Fortunately, the Japanese, too, were grappling with the severe pressure of crushing defeats in the Pacific and of failed supply lines, the result of U.S. submarine attacks. When the Chinese launched a counteroffensive in April 1945, they won back some air bases and stopped the enemy's renewed drive on Kweiyang in May and June. At the battle of Chihchiang casualties were heavy; a Chinese base hospital, staffed by both American and Chinese personnel, worked beside the 34th Portable Surgical Hospital, receiving 150 casualties a day for several weeks. In the base hospital two Americans performed all surgery in an operating room run by American enlisted technicians. American trucks transported the overflow of evacuees 60 miles to the Chihchiang air base. Ultimately, three more portables and an American field hospital platoon arrived to support the Chinese combat forces. Despite inadequate equipment, the mortality rate for the battle wounded at the Chihchiang hospitals reached a low of 1.95 percent, or about half that recorded for Americans in World War II—a tribute either to excellent surgery, poor evacuation, or both.[58]

The Chinese, tasting victory, now prepared a new thrust against Canton and Hong Kong, only to have the war end with startling suddenness in the late summer of 1945. The efforts of American medical personnel to train, equip, advise, and support the Chinese Army were never subjected to the supreme test of a large-scale offensive. Yet their work in many bitter and ultimately thankless campaigns had provided support for the small complement of U.S. forces, while assisting the British Army and radically changing the practice of many Chinese units from the early days when casualties were abandoned without food or treatment. Against that dismal background and in light of almost heart-breaking shortages and problems imposed by geography and the disease environment of south Asia, the provision even of minimal care was no small accomplishment.

[57]Surg, Chinese Combat Cmd, Annual Rpt (copy), 1945, pp. 3–5, file 319.1–2, HUMEDS, RG 112, NARA.

[58]If many casualties die before reaching the hospitals, the hospital death rate is correspondingly low. The China theater by this time had five helicopters and performed what later would be called medevac missions, but the new device was not yet of statistical significance. See Surg, Chinese Combat Cmd, Annual Rpt (copy), 1945, p. 2, file 319.1–2; Smith, "Chinese Army Medical Service," 2:218–19, file 314.7. Both in HUMEDS, RG 112, NARA. See also Romanus and Sunderland, *Time Runs Out,* pp. 276–90.

CHAPTER X

Large-Unit War: The Philippines

While the Allies reconquered Burma and suffered setbacks in China, the climactic battles of the war against Japan took shape in the Pacific. By September 1944 General MacArthur's forces had conquered Morotai Island in the Moluccas that lie southeast of Mindanao, while Admiral Nimitz' forces had seized the Palaus that lie due east. After extensive debate, the Joint Chiefs of Staff dropped several proposed operations and agreed to a quick attack on the Philippines. The first target was the large central island of Leyte, followed by Luzon, various smaller islands, and Mindanao.

Leyte

The largest amphibious operation of the Pacific war to date, the attack on Leyte would employ an entire field army of more than 200,000 troops and a flotilla of more than 700 ships. Counting personnel staging for future operations, some 258,000 Americans would be on Leyte by the end of the fighting. Army units from the Pacific Ocean Areas (PAO) brought their medical support with them, and the Sixth Army surgeon set standards for the invasion force once ashore.

Overall logistical responsibility for the operation belonged to MacArthur's service forces, and General Denit prepared to call upon all the medical resources of the Southwest Pacific Area (SWPA) to support the effort. He summarized his duties:

> transportation on troop and cargo transports of battalion medical troops; portable surgical, field and evacuation hospitals, surgical teams, and surgeons; arrangements for care of casualties suffered by air attack en route; establishment of evacuation by sea and air after the landings; planning for initial supplies; refrigeration for whole blood; and establishment and maintenance of isolated installations equipped to accomplish all categories of definitive surgery.

His consultants also provided instruction in the newest advances of military medicine; in March 1944 a senior officer was assigned to instruct all units, but especially those in the forward areas, in the use of penicillin.[1]

[1]CSurg, USAFWESPAC, Annual Rpt, 1945, pt. 1, p. 12 (quotation), file 319.1–2; Rpt, Col I. Ridgeway Trimble, MC, OofCSurg, USASOS, 25 Dec 45, sub: Notes on Surgery in Southwest Pacific Area and Western Pacific Area, August 1944–November 1945, p. 14, Historians files. Both in Historical Unit Medical Detachment (HUMEDS), Record Group (RG) 112, National Archives and Records Administration (NARA), Washington, D.C. See also M. Hamlin Cannon, *Leyte: The Return to the Philippines*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1954), pp. 26, 367. The officer assigned to teach the use of penicillin, Col. Frank M. Glenn, MC, became surgical consultant to the Sixth Army shortly after the Leyte landings.

The kind of warfare that impended—with large American units engaged on extensive landmasses amid a heavy population of friendly civilians—resembled the European fighting of 1944 more than the Pacific campaigns to date. Hence, a strong medical establishment was necessary. The Sixth Army's six divisions were organized into two corps, the X from the Southwest Pacific Area and the XXIV from the Pacific Ocean Areas, plus a two-division reserve. Both corps were to land on northeastern Leyte, with the aim of establishing air and logistical bases—especially airfields in the broad, flat Leyte Valley on the western side of the island—to cover and support the reconquest of the Philippines.[2]

The medical organization of the huge task force followed what were by now standard procedures. At sea the Navy assumed responsibility for the health of the troops, though on many ships Army medical personnel carried out the actual work. SWPA personnel staged and sailed from bases 700–2,000 miles away on Biak, Noemfoor, Hollandia, Aitape, and Manus. The X Corps was transported and sustained by the U.S. Seventh Fleet, the XXIV Corps by the U.S. Third Fleet. MacArthur's VII Amphibious Force provided forty casualty-converted LSTs (landing ship, tank), including twenty-three with surgical teams, to support the early phases of the landing; four carried surgical specialty teams—orthopedic, ophthalmic, thoracic, and genitourinary. Shore parties and beach parties were to be established as usual, with serious cases dispatched to the ship best equipped to handle them.

At the landing seventeen surgically equipped LSTs would provide care, disgorging the troops and equipment they carried and then beaching themselves to enable vehicles to drive aboard with the wounded. Converted APAs (transport, attack) would receive the seriously injured offshore. For both attack forces, hospital ships—vulnerable because of their Geneva markings and lack of armament—would arrive later. Once the Sixth Army went ashore, responsibility would devolve upon its ranking medical officers: Colonel Hagins, the Sixth Army and task force surgeon; Col. Charles McC. Downs, MC, the X Corps surgeon; and Colonel Potter, the XXIV Corps surgeon, who had served earlier in the war as the 7th Infantry Division surgeon at the invasion of Attu.[3]

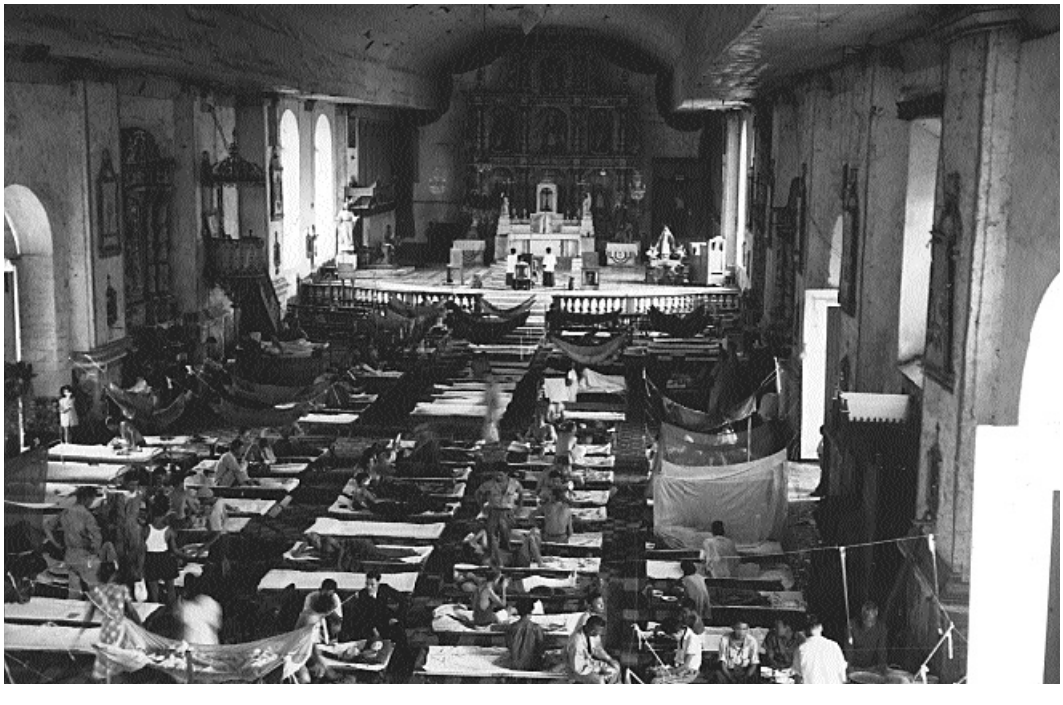
Supporting the X Corps were the 36th and 58th Evacuation Hospitals; the 1st, 2d, and 3d Field Hospitals; the 16th, 19th, and 27th Portable Surgical Hospitals; the 135th Medical Battalion; two amphibious medical companies of the 2d Engineer Special Brigade's 262d Medical Battalion; a medical supply platoon; and no less than nine antimalaria units—three assigned to survey and six to control. Three separate collecting companies and three separate clearing companies also were at the

[2]Cannon, *Leyte*, p. 26; Walter Krueger, *From Down Under to Nippon: The Story of the Sixth Army in World War II* (Washington, D.C: Combat Forces Press, 1953), pp. 141–53; Robert L. Eichelberger, in collaboration with Milton Mackaye, *Our Jungle Road to Tokyo* (New York: Viking Press, 1950), pp. 165–80. Unless otherwise noted, the tactical narrative on Leyte is drawn from these sources.

[3]Rpt, U.S. Seventh Fleet, n.d., sub: Amphibious Operations Invasion of the Philippines, October 1944 to January 1945, p. 1, file 370.5, HUMEDS, RG 112, NARA; Department of the Navy, Bureau of Medicine and Surgery, "The United States Navy Medical Department at War, 1941–1945," 1:356–57, files of Bureau of Medicine and Surgery Archives (BMSA), Washington, D.C.; Cannon, *Leyte*, p. 28. On Attu, see Chapter V.



36th Evacuation Hospital at Palo, Leyte, *occupying the San Salvador Cathedral*



corps' disposal. By comparison, the XXIV Corps was much less well endowed; it lacked evacuation hospitals and had fewer collecting and clearing companies and anti-malaria units. Attached to the Sixth Army, the 135th Medical Group was to direct evacuation from Leyte and provide ambulance service to the X Corps, while the 71st Medical Battalion would evacuate the XXIV Corps. The remainder of the 262d Medical Battalion, plus additional portables and malaria control and survey units, would operate directly under army control.[4]

Finally, the Army Service Command (ASCOM), an organization new to the Pacific, made its appearance in July 1944, with the mission to support the Sixth Army by bridging the gap between the tactical command's area of responsibility and that of the USASOS. Numbering about 45,000, the command contained engineer, quartermaster, medical, and other service units. Its medics controlled five general and nine station hospitals, intended to back up the mobile units. In effect, the command worked as a mini-USASOS to organize rear-area support. When the USASOS arrived, ASCOM personnel would pass to its control, forming the complement of the first major logistical base in the Philippines at Leyte's capital of Tacloban.[5]

Systematic plans were made for evacuation as well. Transports and hospital ships (and planes, once airstrips were built) would remove the seriously wounded from Leyte, returning MacArthur's forces to the Southwest Pacific Area and Nimitz' to the Pacific Ocean Areas—although military planners hoped to establish a sixty-day evacuation policy as soon as possible. To this end, mobile units provided about 4,900 beds to receive casualties, while the ships offshore formed a floating reserve of 3,000–5,000 beds; ASCOM, once established ashore, would offer another 7,650 fixed beds. The resources proved ample in numbers, but other factors would cause the Sixth Army to remain dependent on the ships longer than the planners anticipated.[6]

Discipline against disease was tight. The troops were ordered to wear full clothing, impregnated with miticide to protect them against scrub typhus. They also were instructed in measures to control flies and avoid schistosomiasis, as well as given Atabrine to suppress malaria, salt tablets to guard against heat exhaustion, and halazone tablets to purify drinking water. The presence of a friendly civilian population of some 900,000 was duly noted: Prophylactic kits were issued against venereal disease, and medical personnel were ordered to care for civilian patients to the extent permitted by military needs. Special Philippine civil affairs units had already been established under the field commanders, with orders to contact civilian doctors and nurses and arrange as quickly as possible to relieve the suffering of the innocent victims of the battles that now impended. But no medical units were earmarked for civilians alone, an omis-

[4]Rpt, Surg, X Corps, 9 Mar 45, sub: Medical Service History, Leyte Campaign, X Corps, pp. 2–3, file 210–26, box 4153, Entry 427, RG 407, NARA.

[5]CSurg, USAFWESPAC, Annual Rpt, 1945, pt. 1, p. 18, file 319.1–2, HUMEDS, RG 112, NARA.

[6]See Quarterly Rpts (copies), Oct–Dec 44, for Surg, Sixth Army, pp. 13–14, 126th Gen Hosp, pp. 1–2, and 49th Gen Hosp, pp. 1–3, plus Jan–Mar 45, for 133d Gen Hosp, pp. 1–2, file 319.1, HUMEDS, RG 112, NARA.

sion that in time would have a serious impact on the field forces.[7]

The Landings

On their 3,000-mile voyage from the Hawaiian Islands, POA troops of the III Amphibious Force endured crowded quarters, bad ventilation, unrelenting heat, and boredom—the usual precursors of an invasion. On 20 October 1944 the immense fleet approached eastern Leyte over a glassy sea. Small ranger forces, supported by the 10th Portable Surgical Hospital, had already landed and secured several offshore islands. As the first waves of assault craft reached the beaches, the X Corps began to land to the north, near Tacloban, while the XXIV Corps went ashore to the south, near Dulag.

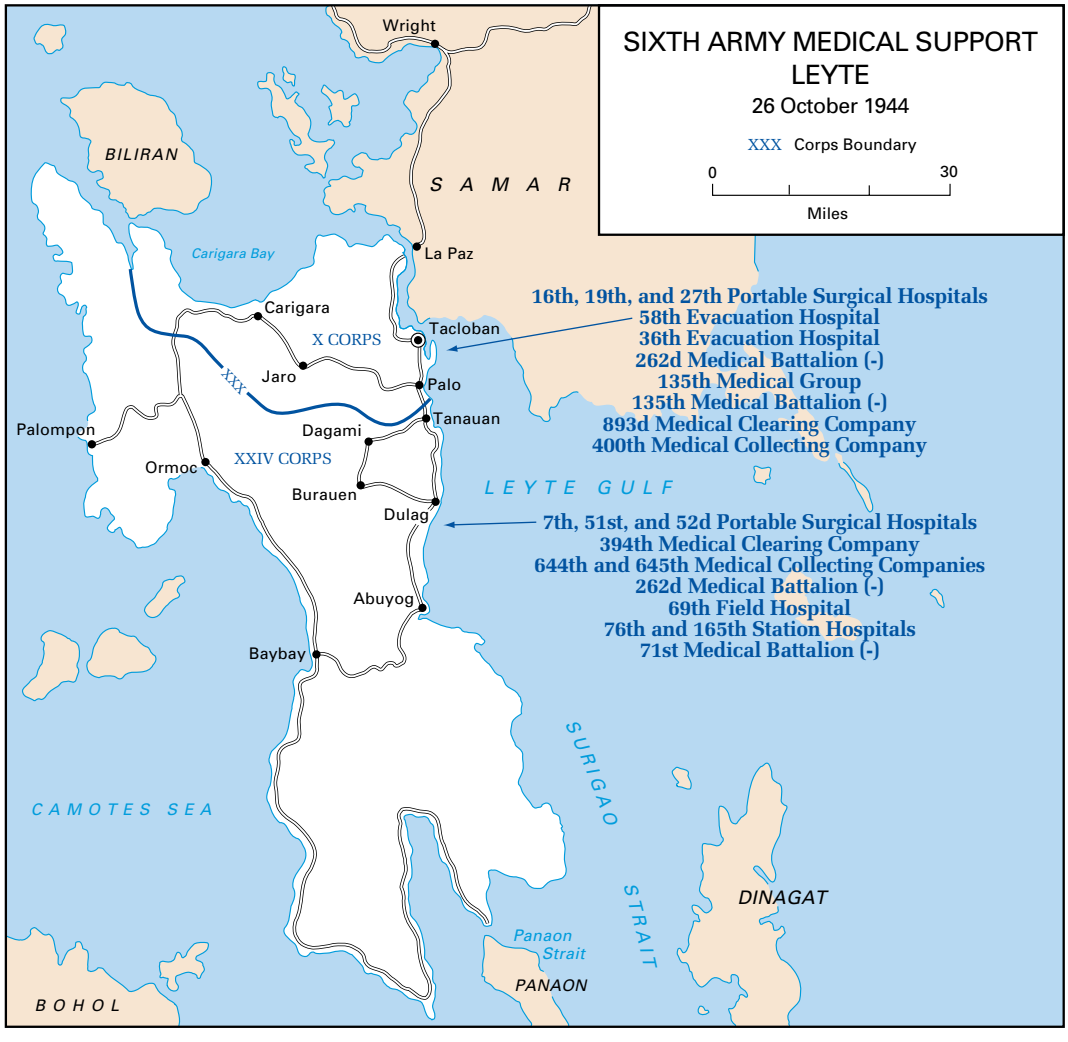
In the north opposition was light, and Tacloban, with its airfield, fell to the 1st Cavalry Division the next day. Here the president of the Philippines proclaimed his temporary capital; General MacArthur established his headquarters; and in November the USASOS began to build a major installation, Base K, and in January 1945 a new advance base to organize a growing logistical establishment.

Meanwhile, the tide of battle in the north moved on, as the X Corps' 24th Infantry Division entered northern Leyte Valley. In the XXIV Corps area Japanese units centered around a complex of airfields. Despite stout resistance, elements of the 7th Division slogged through swamps and mud to seize Dulag, while others struck south to Abuyog, from which a very poor road crossed the rugged mountains to the west coast of the island. Problems in evacuation developed early, in part because the XXIV Corps had originally been loaded for a campaign on the small island of Yap, northeast of the Palaus, and was short of vehicles needed for the Leyte fighting.

Throughout the first few days division medics in both regions provided casualties with initial care. Most of the wounded at this stage were victims of enemy bombs—almost continuous air raids battered the invaders for their first twelve days ashore—though a substantial number were hurt by friendly fire. The Navy offered higher-echelon treatment on its hospital LSTs, but here serious problems developed. When shallow water prevented most LSTs from beaching, casualties had to be transferred to small boats or amphibians, and the regulating system that was to have sent serious cases to teams of specialists broke down under the conditions of combat.

In the beginning most things seemed to go well for the medics ashore on Leyte. By 26 October the hospitals were getting established; in the X Corps sector Colonel Hagins took control of the hospitals, the 135th Medical Battalion, and the separate medical companies as the Sixth Army area organized to the rear of the fighting (*see Map 12*). Departing from earlier SWPA policy, General Denit allowed female nurses into Leyte on the twenty-ninth, and contingents were soon at work in field and evacuation hospitals. By the time of the Leyte operation penicillin had become plentiful not only in hospitals but also in clearing companies, where the wounded received it intravenously before under-

[7]Rpt, Surg, X Corps, 9 Mar 45, pp. 8–11, file 210–26, box 4153, Entry 427, RG 407, NARA; Surg, X Corps, Quarterly Rpt (copy), Oct–Dec 44, p. 42, file 319.1, HUMEDS, RG 112, NARA.



MAP 12

going surgery. Though ruthless enemy attacks on clearly marked hospital ships reduced their usefulness, and though minor problems appeared, maturity and competence marked the initial effort.[8]

Soon, however, enduring problems of the campaign surfaced. Delayed by the long high-level debate over strategy, the invasion had come at the opening of the October-to-January wet season. Engineers found great difficulty in building and maintaining roads and in building or upgrading the airfields that had been the original reason for invading Leyte. As the attack forces moved inland,

[8]Rpt, Seventh Fleet, n.d., pp. 1–4, file 370.5; Quarterly Rpts (copies), Oct–Dec 44, for Surg, X Corps, pp. 23–24, and Surg, Sixth Army, pp. 11–12, 28, file 319.1; OofSurg, USAFFE, ETMD (copy), 23 Dec 44, p. 28, file 350.05. All in HUMEDS, RG 112, NARA.

increasing distance combined with heavy rains and enemy fire to slow evacuation time. In some areas the expedients used recalled the Indian Wars; the wounded were dragged from the wettest spots on travois pulled by water buffalo. While first aid was almost always available, such conditions meant that a casualty might wait up to thirty hours for surgical care. The results would show up in the statistics of the campaign: 5.6 percent of the wounded would die, compared to 4 percent in the European theater; the ratio of killed to wounded would stand at 1:2.94, higher than in any prior SWPA operation; and gas gangrene would appear in 1 percent of the wounded. Trench foot would become a serious problem, for the first time since Attu.[9]

Meantime, the crisis of the campaign passed offshore. Even as Japanese planes—including the first suicide craft, or kamikazes—battered the invaders and their ships, ominous intelligence was received of the approach of a major Japanese fleet. Navy transports withdrew from the southern beaches, compelling diversion of surgical LSTs from the north. On 23–25 October, in one of the great naval battles of the war, the Seventh Fleet and elements of the Third narrowly repulsed the Japanese attack directed at the beachhead, wrecking much of the remaining strength of two enemy fleets. Ashore, the Americans made progress, but won no decision. Even though by 2 November they had secured four of Leyte's five airfields and controlled the Leyte Gulf, they still faced a harsh fight against reinforced Japanese Army forces and the wild sodden terrain.

Decisions by the *Imperial General Headquarters* ensured that the decisive struggle for the Philippines on land as well as on the sea would take place on Leyte and that casualties sustained there by both sides would be correspondingly heavy. The remaining Japanese port of entry for its reinforcements was the west coast town of Ormoc. The X Corps moved against it from the north, crossing the mountains to enter the Ormoc Valley, while the XXIV Corps pushed toward Baybay, intending to turn north once it reached the west coast. Severe fighting resulted in harsh country that was covered with dense jungle and drenched by incessant rain. Typhoons swelled the rivers, turning the trackless terrain into quagmires, where some wounded drowned. The wettest areas had to be negotiated by amphibians, and long litter hauls became commonplace.

Field and evacuation hospitals were difficult to transport, while their replacements, the fixed hospitals, were often consigned to morasses because various headquarters preempted the few dry spots. "Today . . . I lost the site of my convalescent hospital to an air strip [*sic*]," complained Lt. Col. Paul O. Wells, MC, the Base K surgeon, "and the site of a 500 bed station [hospital] to an ordnance dump!" Ships piled up offshore; the Army Service Command found great difficulty in unloading one-third of the daily cargo it had anticipated; hospital assemblies remained aboard, and the general hospitals, in particular, had trouble marrying equipment to personnel. The major exception, the 133d General Hospital, arrived on 25 November aboard four LSTs; unit personnel carried

[9]Army Service Forces Monthly Progress Rpt, 31 May 45, sec. 7, pp. 18–19, Historians files; "Central Philippine Operation: Medical Aspects of Leyte-Samar Campaign," p. 5, file 370.2. Both in HUMEDS, RG 112, NARA. See also "Navy Medical Department at War," 1:357, BMSA.

their own materiel ashore, set up the hospital in the customary quagmire, and opened for business the next day.[10]

But few had the happy experience of traveling with their gear, and in general the Sixth Army's experience with fixed hospitals in combat was not a happy one. Some, working lamely with inadequate equipment, functioned far below their proper level. Many station hospitals disappeared, merged with other units, and few played significant parts in the campaign. On the other hand, too few mobile hospitals had been provided. On 24 November, thirty-four days after the landing, only 2,400 beds were in operation out of more than 8,500 present on Leyte; on 29 December only 4,900 of 11,800 were functional.[11]

More than ever, the Army found itself depending upon the LSTs and other floating hospitals, which held the wounded close to the fighting and provided them care the medical service ashore could not always give. The dedicated hospital ships served mainly to evacuate casualties who could not be treated adequately at Leyte. Praising the Navy, Hagins declared that, without its help, "the level of medical and surgical care on Leyte would certainly have been sub-standard." The other effect of inadequate bed strength was to compel the evacuation of the lightly wounded, who ought to have been hospitalized on Leyte and returned to their units but who instead recovered in distant New Guinea or Saipan. Indeed, by the time some evacuees arrived at their destination, they were fit to return to duty.[12]

The medical problem for troops in the forward areas was defined by evacuation more than by any other factor. Each corps was charged with evacuating casualties to the ships until such time as the Sixth Army could assume responsibility (as matters turned out, 25 October for the X Corps and 14 November for the XXIV Corps). But as the fighting moved inland, transportation even to the forward hospitals grew more difficult. Jeep (¼-ton) ambulances proved useless in marshy areas, and too few of the higher-built ¾-ton ambulances and tracked vehicles, such as Weasels, had been provided. Units working along the coasts were luckier; their wounded were evacuated by landing craft or amphibians in comparative safety and much greater comfort than those who had to traverse inland Leyte.

Nevertheless, soldiers wounded in the fighting on the west coast endured difficult times. The whole island bulk lay between them and the fleet in Leyte Gulf; Japanese planes harried the 7th Division and strafed the offshore craft as well. In the Ormoc corridor an Army surgeon saw a party of fifty casualties who had been three days in transit without food. At night DUKWs carried some back to Baybay to receive emergency treatment at an advanced aid station, set up by the 7th Medical Battalion. Those who needed hospital care had to be evacuated by ambulance over the rough and twisting road to Abuyog, a trip that usually lasted

[10]As quoted in Blanche B. Armfield, *Organization and Administration in World War II*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963), p. 478. See also 133d Gen Hosp Quarterly Rpts (copies), Oct–Dec 44, pp. 1–2, and Jan–Mar 45, p. 1, file 319.1, HUMEDS, RG 112, NARA, and compare with similar reports for the 44th, 49th, and 126th Gen Hosps.

[11]"Central Philippine Operation," pp. 1, 9, file 370.2, HUMEDS, RG 112, NARA.

[12]As quoted in Cannon, *Leyte*, p. 194. See also "Central Philippine Operation," p. 9, file 370.2, HUMEDS, RG 112, NARA.

two days. Not until early December did hospitalization become available on the west coast and the long trip over the mountains come to an end.[13]

Air evacuation got off to a slow start. Enemy attacks slowed the improvement of the Tacloban airfield, which Army planners had expected to ready quickly for service. Evacuees awaiting flights piled up in air holding stations until 4 November. Thereafter a regular system developed; the wounded were routed through evacuation hospitals to airfields, where C–54s loaded casualties from the XXIV Corps for the Marianas and C–47s those from the X Corps for SWPA bases. By Christmas almost 4,500 had been evacuated by air, two-thirds to POA bases (which may have reflected the XXIV Corps' poorer holding facilities on Leyte). Only in the mopping-up phase of the campaign did the airfields at last begin to function as expected. Then, with shipping diverted to other battlefields, the planes began to carry almost all of the remaining casualties of Leyte's last battles.[14]

Supply, no less than evacuation, reflected not only the problems of a campaign mounted from two different theaters but also the difficulties imposed by the situation at Leyte itself. Intended originally to fight on Yap, the XXIV Corps was short of supplies, as it was of medical units generally. Anticipating a sixty-day campaign, Sixth Army planners provided the comprehensive list of medical materiel needed in combat only for that period; the troops actually carried much less, a five-day supply for the assault units and a thirty-day supply for all others. Resupply was by medical maintenance units, which provided only some 700 of the more than 3,000 items needed for balanced operations.

Conditions at the beachheads complicated the picture. Heavy Japanese air strikes, including attacks from kamikazes, helped to disrupt and confuse unloading. Once on Leyte, enemy counterattacks, lengthening supply lines, and floods and swollen streams made difficult the task of hauling food, ammunition, and medicines to the troops inland. When slow progress against the enemy compelled General MacArthur to commit first his reserve divisions and then other units as well, the supply system was obliged to support still more troops fighting in ever more remote locations.

Those in very isolated areas depended on airdrops. While some 70 tons were delivered in this way, and even delicate items like bottled plasma and whole blood generally survived, the problems were evident. The 1st Cavalry Division, fighting in the mountains between Leyte and Ormoc Valleys, lived for a time on short rations, as did Filipino guerrillas, who were operating as auxiliaries. A member of the 11th Airborne Division recorded that

> for many days, three men had only one K ration among them. . . . We were shorter of food than we had ever expected to be; our ammunition had to be counted by rounds rather than by clips; we suffered awaiting

[13]Edmund G. Love, *The Hourglass: A History of the 7th Infantry Division in World War II* (Washington, D.C.: Infantry Journal Press, 1950), p. 258; Surg, Sixth Army, Quarterly Rpt (copy), Oct–Dec 44, pp. 11–14, 19–20, file 319.1, HUMEDS, RG 112, NARA.

[14]OofSurg, USAFFE, ETMD (copy), 23 Dec 44, pp. 11–12, file 350.05, HUMEDS, RG 112, NARA. For summary accounts of evacuation, see Quarterly Rpts (copies), Oct–Dec 44, file 319.1, loc. cit., for Surg, Sixth Army; Surg, X Corps; Surgs, 77th and 96th Inf Divs; 36th and 58th Evac Hosps; 1st Field Hosp; and 27th and 30th Port Surg Hosps. See also Sixth United States Army, "Report of the Leyte Operation, 17 October 1944–25 December 1944," pp. 262–64, U.S. Army Center of Military History Library (CMH–L), Washington, D.C.

medical supplies from the skies which did not come; and we hated with a bitter hatred the gods that made the weather, the pilots who wouldn't fly, and the powers that sent us into the mountains in the first place.[15]

Such experiences notwithstanding, most medical supply shortages, except for isolated units, lasted only a few hours. Blood plasma, morphine Syrettes, penicillin, and critical equipment were available in most cases where they were needed. Ample quantities of most items had been shipped; most medical supplies were comparatively light and could be delivered by persistence or by a daring pilot in the necessary quantities. But during the heavy fighting of the late autumn the supply lines became dangerously tenuous, a problem that could only be eased by an improvement in the tactical situation.

In December the 77th Infantry Division staged a new invasion. Supported by the 95th Portable Surgical Hospital, the unit landed almost unopposed south of bomb-shattered Ormoc on the west coast, splitting the enemy forces. In a foretaste of the battle for Manila, a fierce house-to-house battle virtually destroyed what remained of the town. The northern and southern pincers now closed on the Ormoc Valley, where the Japanese made a desperate last stand. Jeep ambulances evacuated most frontline stations, while artillery liaison planes served isolated areas. Small boats evacuated from clearing stations along the coast. The paratroopers fighting in the mountains sought to rely on cub planes, which were fitted up as makeshift ambulances with sheets of plywood and mattresses that bumped the pilots in the nape of the neck during flight. But such planes were too few, and many wounded had to be held for days, or else littered by special teams over the mountains and through the jungles.[16]

Despite many difficulties, reinforcements were not the only good news for the invading forces that December. The weather improved and unloading of the transports in Leyte Gulf proceeded. Many hospitals that had been mobile only in theory at last became mobile in fact, finally moving away from the sodden bases where they had been detained for so long by inadequate transport, heavy rain, and tactical stalemate. To support the divisions on the west coast, the 69th Field Hospital and the 165th Station Hospital moved to the Ormoc area, soon to be joined by the 645th Medical Collecting Company. All were needed. Not only did the 77th Infantry and 11th Airborne Divisions require support, but, once the pincers closed, the X Corps as well began to send casualties down the valley from the north.

With transport functioning and the enemy confined to a shrinking region in the west, other improvements in the situation followed naturally. As hospitals were able to deploy their expansion beds, fewer patients were lost to evacuation from the island. Whole blood had been available in sufficient quantities

[15]Quotation from Edward M. Flanagan, *The Angels: A History of the 11th Airborne Division, 1943–1946* (Washington, D.C.: Infantry Journal Press, 1948), p. 55. On the supply situation, see Sixth Army, "Leyte Operation," p. 264, CMH–L; Quarterly Rpts (copies), Oct–Dec 44, for Surg, Sixth Army, pp. 36–37, Surg, X Corps, pp. 45–46, 56, and Surg, 7th Inf Div, p. 1, plus Jan–Mar 45, for 126th Gen Hosp, pp. 9–12, file 319.1, HUMEDS, RG 112, NARA.

[16]Flanagan, *Angels*, p. 44; Surg, Sixth Army, Quarterly Rpt (copy), Oct–Dec 44, p. 20, file 319.1, HUMEDS, RG 112, NARA; [77th Division Association], *Ours To Hold It High: The History of the 77th Infantry Division in World War II* (Washington, D.C.: Infantry Journal Press, 1947), pp. 148–59.

from the beginning of the campaign, but now began to arrive by air direct from San Francisco via Guam. Disease was not a serious threat on Leyte, for the island was not heavily malarial; the POA troops were not seeded with the disease; and scrub typhus was adequately controlled by the preventive measures worked out in earlier campaigns. Dengue rates were high, however, reaching 68 per 1,000 troops per year in the Sixth Army. Infectious hepatitis and schistosomiasis appeared, the latter for the first time in the Southwest Pacific Area, and an outbreak of amebic dysentery raised medical concerns. But no epidemics occurred, and the winding down of the fighting brought further improvement in a picture that was already comparatively bright.[17]

The winding down of the fighting meant better days, too, for the hard-used civilian population of Leyte. A poor people in the main, most of the 915,000 inhabitants of the island had lived simply before the war in thatched dwellings. They worked the fields, harvesting rice, sugar cane, corn, and copra. The war had brought the Japanese and, in the hills, quarrelsome factions of guerrillas who seemed to hate each other more than the enemy. All had levied upon the people, a burden that grew as more Japanese troops began to enter the island early in 1944. With the American landings, small Philippine civil affairs units (PACU), which were attached to the Sixth Army, had begun to assume responsibility for their care, pending the reestablishment of a civilian government by the Philippine Commonwealth.[18]

One of the most pressing needs was for medical care, long neglected under Japanese administration. Each 49-man Philippine civil affairs unit had a medical section of 1 officer and 5 enlisted men, whose duty was to establish a functioning public health system in the unit's area of control—on average, about 12 square miles. The medical officer set up quarantine procedures, provided for malaria control, and launched an immunization program to protect against cholera, smallpox, and other illnesses, relying greatly on local civilian doctors, nurses, and pharmacists. Most PCAU members were Filipinos, and their work entailed coordination with the Civil Affairs Section, Sixth Army; the task force surgeon; and the representatives of the civil government.

But to expect so few to care for so many, in a war zone where fighting went on for months, was plainly unrealistic. As a result, much of the burden fell on the field forces, which alone had the manpower and supplies to meet the

[17]CSurg, USAFWESPAC, Annual Rpt, 1945, pt. 1, p. 101, file 319.1–2; Surg, Sixth Army, Quarterly Rpt (copy), Oct–Dec 44, pp. 28, 33–34, file 319.1. Both in HUMEDS, RG 112, NARA. See also Malcolm S. Ferguson and Frederik B. Bang, "Schistosomiasis," in Ebbe Curtis Hoff. ed., *Communicable Diseases Transmitted Through Contact or by Unknown Means*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1960), pp. 65–72. The following unit histories also proved useful in developing a picture of the campaign: Francis D. Cronin, *Under the Southern Cross: The Saga of the Americal Division* (Washington, D.C.: Combat Forces Press, 1951), pp. 219–64; Orlando R. Davidson, J. Carl Willems, and Joseph A. Kahl, *The Deadeyes: The Story of the 96th Infantry Division* (Washington, D.C.: Infantry Journal Press, 1947), pp. 45–76; [77th Division Association], *Ours To Hold It High*, pp. 139–211; B[ertram] C. Wright, comp., *The 1st Cavalry Division in World War II* (Tokyo: Toppan Printing Co., 1947), pp. 71–100.

[18]Cannon, *Leyte*, pp. 198–203; "Leyte: Historical Report of the 24th Infantry Division Landing Team, 20 October 1944–25 December 1944," pp. 146–50, CMH–L.

emergency. No sooner had the Americans landed than people made homeless by the naval bombardment began to return, stunned and sometimes injured, to the ruins of their towns. Food, shelter, and medical care had to be provided. Both Potter and Hagins devoted units entirely to assisting civilians, including the 644th Medical Collecting Company, which operated a 50-bed civilian hospital in a San Jose church; the 394th Medical Clearing Company, which established a 100-bed facility in a Dulag elementary school; and the 893d Medical Clearing Company, which ran a similar hospital at Palo. Four days after the invasion, the Sixth Army had about 45,000 people under its care, the population of more than fifty communities.[19]

At this time, of course, the army's own lines of supply were short and the floating hospitals were available offshore for its wounded. Nevertheless, such a burden of noncombatants would have made operations difficult, and civil affairs proved its value by opening shelters, mainly in school buildings that had survived in Tacloban and elsewhere. Hospitals were improvised in the same area, at Carigara on the north coast and at Baybay on the west coast. Because supplies for civilians were inadequate, the Philippine civil affairs units continued to provide food, medical supplies, and supervision for the hospitals long after the battlefront had moved on.

A relatively dense population and casual fraternization between soldiers and civilians ensured that in protecting Filipinos from disease the civil affairs units would be protecting soldiers as well. Cooperation between the Sixth Army's malaria units and civilian authorities was close, and soldiers and civilians worked together to control flies and reduce amebic dysentery. In January and February 1945 a sharp rise in venereal disease rates began. The army was learning in the Pacific, as in contemporary Europe, the special advantages and problems of fighting in the towns and fields of one's allies—above all, that the health of soldier and civilian were really inseparable and that, in consequence, civil affairs was everybody's business.[20]

For practical purposes Leyte was in American hands by Christmas, though bitter mopping-up campaigns remained to be fought. On 26 December control passed from General Krueger's Sixth Army to the Eighth Army under General Eichelberger. Thus a bloody, often frustrating, ultimately decisive battle moved toward its conclusion. Mopping up was a dangerous, rough, inglorious task, but by May 1945 most of the remaining Japanese soldiers, their numbers variously estimated at 5,000 to 28,000, had been killed. Despite contemporary claims that 43 Japanese to 1 American had died, a proportion MacArthur termed "unsurpassed in the history of war," American casualties numbered more than 18,000,

[19]See Quarterly Rpts (copies), Oct–Dec 44, for Surg, Sixth Army, p. 12, Surg, X Corps, pp. 42–44, and Surg, 7th Inf Div, p. 1, file 319.1; OofSurg, USAFFE, ETMD (copy), 23 Dec 44, p. 4, file 350.05; and "Central Philippine Operation," p. 1, file 370.2. All in HUMEDS, RG 112, NARA. See also Unit Histories, Philippine Civil Affairs Units (PCAU) 1 and 2, Sep 44–Jul 45, files PCAU 1–0.1 and PCAU 2–0.1, box 22416, Entry 427, RG 407, NARA.

[20]Surg, X Corps, Quarterly Rpt (copy), Oct–Dec 44, pp. 42–44, file 319.1; CSurg, USAFWESPAC, Annual Rpt, 1945, pt. 1, pp. 95–99, file 319.1–2; "Central Philippine Operation," pp. 6–7, file 370.2. All in HUMEDS, RG 112, NARA. See also Unit Histories, PCAU 1 and 2, Sep 44–Jul 45, files PCAU 1–0.1 and PCAU 2–0.1, box 22416, Entry 427, RG 407, NARA; Armfield, *Organization and Administration*, pp. 480–81.



SHELL-TORN CHURCH AT DULAG, LEYTE, *used as an evacuation hospital*

including 15,500 from Army ground troops alone, of whom 3,500 died. Estimates of Japanese dead vary widely, but apparently about 75,000 died, with fewer than 1,000 taken prisoner.[21]

In every sense Leyte was a major battle, which completed the ruin of the enemy's fleet, decimated its remaining air force, and severely weakened its army forces defending the Philippines. But new tests for the victorious Americans lay ahead on Luzon.

Luzon

The attack on Luzon aimed at Lingayen Gulf, where the Japanese had landed in their own invasion of 1941. The reason was the same excellent beaches, giving ready access to the Central Plains at whose southern end lay the capital city of Manila. Secondary assaults, both airborne and amphibious, were planned to keep the enemy off balance, and Eichelberger's Eighth Army was to seize Mindanao and certain islands in the central Philippines at the same time. But Krueger's Sixth Army, now comprising the I and XIV Corps, was to stage the invasion of Luzon from the north, and the effort would be a huge one, involving 191,000 troops in a flotilla of 850 vessels. Preceded by the seizure of sites for airfields on Mindoro Island, which was defended only by Japanese aircraft and a few ships, the landing on Luzon was set for 9 January 1945.[22]

[21]Quotation from CSurg, USAFWESPAC, Annual Rpt, 1945, pt. 1, p. 11, file 319.1–2, HUMEDS, RG 112, NARA. Statistics from Cannon, *Leyte*, pp. 367–68. In late December enemy troops remaining on Leyte numbered about 15,000. See Stanley L. Falk, *Decision at Leyte* (New York: W. W. Norton, 1966), p. 312.

[22]Robert Ross Smith, *Triumph in the Philippines*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1963), p. 29. Unless otherwise noted, the tactical narrative on Luzon is drawn from this source. See also Krueger, *From Down Under to Nippon*, pp. 211–19. The Sixth Army's I Corps comprised the 6th and 43d Infantry Divisions; its XIV Corps, the 37th and 40th Infantry Divisions. The 25th Infantry Division, 11th Airborne Division, 158th Regimental Combat Team, and 13th Armored Group were assigned to the Sixth Army reserve.



UNLOADING A CASUALTY AT THE 7TH EVACUATION HOSPITAL, VILLASIS, LUZON

Medical planning reflected the experience, unity, and matured professionalism of the SWPA system. Almost every line unit could count on more medical support than ever before. Each division was backed up by its own organic units. The I Corps possessed in addition three evacuation hospitals (the 29th, 54th, and 92d), four field hospitals (the 5th, 23d, 37th, and 43d), the 70th Medical Battalion, two amphibious companies from the 3d Engineer Special Brigade's 263d Medical Battalion, nine portable surgical hospitals, and an array of separate collecting and ambulance companies, anti-malaria units, and a medical supply platoon. Backing the XIV Corps were two large evacuation hospitals (the 7th and 21st), two field hospitals (the 24th and 41st), the 135th Medical Battalion, two amphibious companies of the 4th Engineer Special Brigade's 264th Medical Battalion, and a similar melange of smaller units. At army level the 135th Medical Group stood ready to organize evacuation, once the headquarters came ashore and the battalions passed to the group's control.

Early evacuation and treatment of casualties would again be the job of the Navy, which would provide eighteen medically equipped LSTs, including six with surgical teams on board—one to each invasion beach. After the beachhead had been won, the Army Service Command would land with support that included depot companies, malaria survey and control units, sanitary compa-

nies, a medical laboratory, a general dispensary, and station hospitals. Establishment of a new USASOS installation, Base M, would follow. The prospect of good roads in the broad Central Plains of Luzon encouraged the provision of many ambulance companies. The anticipated distances between hospitals also caused planners to dedicate three squadrons of radio-equipped L–5 artillery liaison aircraft to evacuation. The engineers were instructed to build airstrips as requested by army, corps, and division surgeons. A few helicopters were also available, and would do good service before the campaign was over.[23]

Intelligently adapted to the changed conditions of warfare, the medical plan featured an amplitude of forces unusual for the Pacific—some 10,000 medics of all sorts, more than the entire invasion force in some lesser campaigns. By early 1945 the multiple commands of the Pacific theaters and the widely separated lines of attack were converging as American forces neared the enemy homeland. To assist the Luzon operation, Admiral Nimitz supplied naval forces; medical troops staged and embarked from bases throughout the South and Southwest Pacific Areas, some from as far away as New Caledonia. In the early days of the new year troopships moved toward the rendezvous points, until the invasion fleet was over 40 miles in length.

As the ships entered Philippine waters on 9 January, kamikazes dove out of cloud cover, smashing into vessels and sinking seventeen. Despite such harassment, the attack began as scheduled. The landing craft, after circling, formed lines and then made for the shore. "I felt as though I was going to take an important exam," said Capt. George Sharpe, MC, a battalion surgeon. "Shells were screeching overhead. . . . The boat struck the beach and we plunged forward in water up to our waists." Ashore, resistance was light, and by nightfall some 68,000 troops had poured into a beachhead 15 miles wide. The enemy kept up a harassing fire with artillery and mortars, causing light casualties, who were quickly evacuated to the ships. Medical units gave most of their attention to injured civilians. Again, as at Leyte, the limited resources of the Philippine civil affairs units obliged the field forces to care for hundreds of casualties from the first hours ashore.[24]

Although the Japanese had withdrawn into the highlands, they represented an implied threat to the landing area. Hence, General Krueger sent the I Corps into the hills, where stiff resistance from an enemy dug into a maze of ridges and ravines caused 200 battle casualties a day. Moving the wounded to treatment entailed long litter hauls over treacherously steep hills, bare along the ridge lines but thick with rainforest in the inter-

[23]CSurg, USAFWESPAC, Annual Rpt, 1945, pt. 1, pp. 17, 40, file 319.1–2; Quarterly Rpts (copies), Jan–Mar 45, for Surg, Sixth Army, pp. 9–10, 135th Med Group, pp. 2, 5–7, and Surg, I Corps, p. 36, file 319.1; "Seventh Amphibious Force Command History, 10 January 1943–23 December 1945," pp. 71–72, file 314.7 (7th Amphibious Force) SWPA. All in HUMEDS, RG 112, NARA. See also "Navy Medical Department at War," 1:375–76, BMSA; Sixth United States Army, "Report of the Luzon Campaign, 9 January 1945–30 June 1945," 3:56, 155–56, CMH–L.

[24]Quotations from George Sharpe, *Brothers Beyond Blood: A Battalion Surgeon in the South Pacific* (Austin, Tex: Diamond Books, 1989), p. 115. See also Surg, Sixth Army, Quarterly Rpt (copy), Jan–Mar 45, pp. 10–12, file 319.1, HUMEDS, RG 112, NARA; "Navy Medical Department at War," 1:374–78; Krueger, *From Down Under to Nippon*, pp. 225–27.

vening valleys. Weary litter-bearers were supplemented with Filipinos and infantrymen pulled from the line. Medics used metal litters welded to ordinary ones as sleds for moving casualties down slopes and Stokes litters, secured to cable systems, for crossing over precipitous valleys. To the rear of the collecting companies, Sixth Army ambulances carried the wounded back over freshly bulldozed roads to mobile hospitals at San Fabian (*Map 13*). On 15 January the Sixth Army surgeon assumed control of the medical service ashore, and the 135th Medical Group began to coordinate both on- and offshore evacuation, including beach clearing stations and holding units at airstrips. Three days later air evacuation to Leyte commenced, using C–47s that departed from an airstrip at Magdalan.[25]

Meanwhile, the XIV Corps pushed south with deliberate speed through the Central Plains toward Clark Field and Manila. Except for small delaying forces, the enemy was absent. The countryside featured broad flatlands, good roads, and fields of rice dotted with small towns and hamlets. The cultivated landscape spoke of long human residence, and a medical officer, driving down a concrete road, marveled: "It does not seem possible that it is the same war that was being fought in New Guinea. The medical support is in no way similar. Here advancement has been speedy and one has had civilized communities to deal with all along the way."[26]

The main injuries were incurred in marching; medics doctored hundreds of bruised and blistered feet. Some divisions outran their hospitals, which proved to be less mobile in fact than in name; evacuation hospitals sometimes bypassed the field hospitals that they were supposed to back up. Divisional units and portables hugged the moving front, leapfrogging when necessary to keep up. Coordinated by the 135th Medical Battalion, evacuation was swift and smooth, and ambulances surpassed previous SWPA experience both in numbers and in ease of operation.

But as the distance from the hospitals and the Lingayen base increased—by the end of January one field and four evacuation hospitals were operating 120 miles from the beach and the ASCOM hospitals there—air evacuation became a necessity. By now the XIV Corps was fighting its first serious battle of the campaign, around Clark Field and Fort Stotsenburg, where some 30,000 Japanese struggled fiercely to hold onto the complex. Ambulance hauls were too long; serious surgical cases needed quicker treatment. In early February Hagins, who recently had been promoted to brigadier general, ordered his small planes into service. They were more than ever necessary, because by then the battle for Manila had begun.[27]

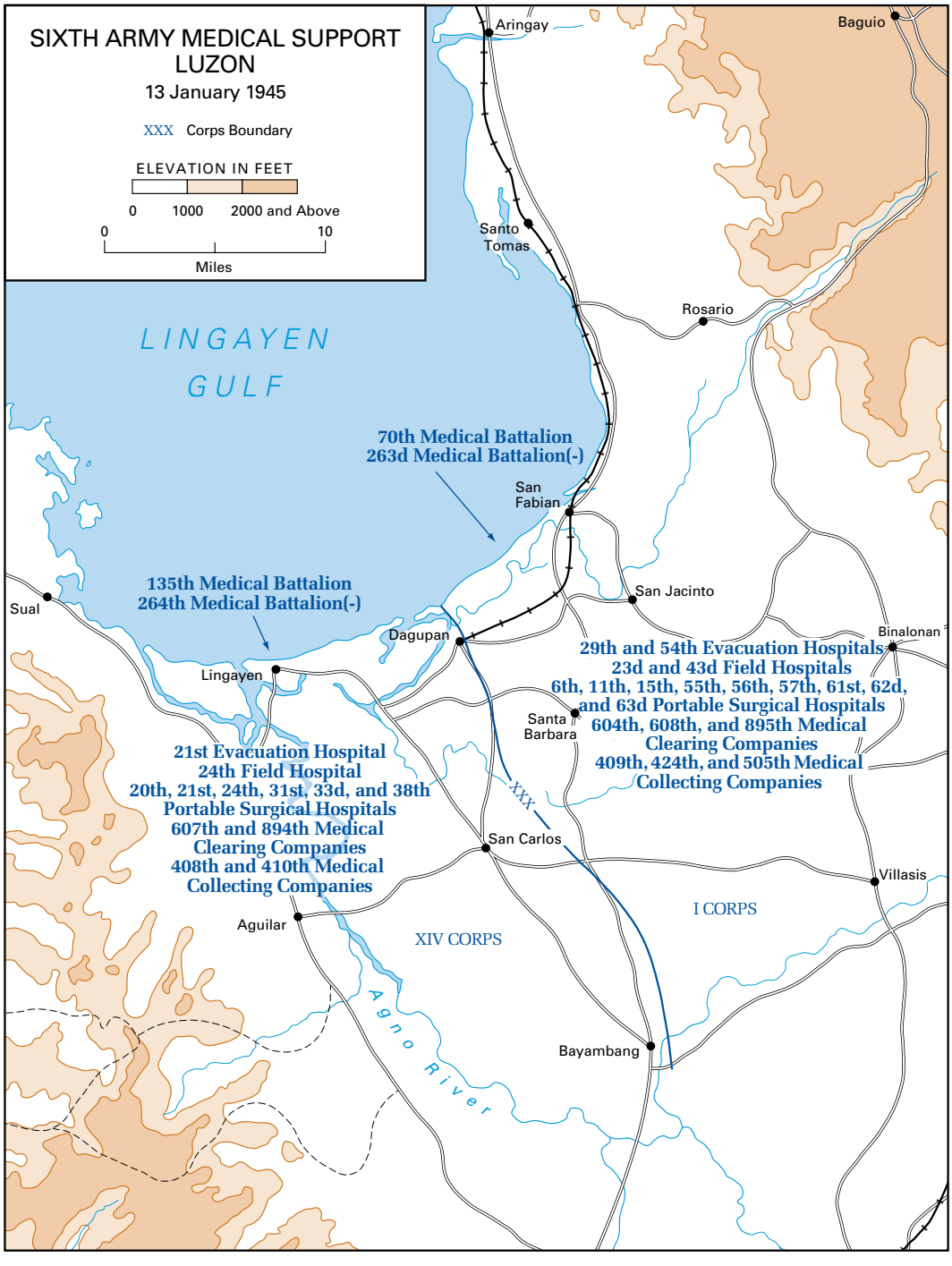
Manila

While two divisions—the 37th Infantry and 1st Cavalry—moved against Manila, supported by three evacuation hospitals, two Eighth Army elements also invaded Luzon. On 28 January the

[25]OofSurg, USAFFE, ETMD (copy), 20 Apr 45, pp. 55–57, file 350.05; Quarterly Rpts (copies), Jan–Mar 45, for Surg, Sixth Army, pp. 11–17, Surg, 43d Inf Div, p. 4, and Surg, 25th Inf Div, pp. 1–4, file 319.1. All in HUMEDS, RG 112, NARA. See also Sixth Army, "Luzon Campaign," 3:156–57, CMH–L.

[26]29th Evac Hosp Historical Rpt, 6 Feb 45, p. 3, file 319.1–2, HUMEDS, RG 112, NARA.

[27]Sixth Army, "Luzon Campaign," 3:157, CMH–L. Hagins was promoted on 4 January 1945.


SIXTH ARMY MEDICAL SUPPORT
LUZON
13 January 1945
XXX Corps Boundary
ELEVATION IN FEET
0
1000
2000 and Above
0
10
Miles
LINGAYEN
GULF
Aringay
Baguio
Santo
Tomas
Rosario
70th Medical Battalion
263d Medical Battalion(-)
San
Fabian
135th Medical Battalion
264th Medical Battalion(-)
Sual
San Jacinto
Dagupan
Binalonan
Lingayen
29th and 54th Evacuation Hospitals
23d and 43d Field Hospitals
6th, 11th, 15th, 55th, 56th, 57th, 61st, 62d,
and 63d Portable Surgical Hospitals
604th, 608th, and 895th Medical
Clearing Companies
409th, 424th, and 505th Medical
Collecting Companies
Santa
Barbara
21st Evacuation Hospital
24th Field Hospital
20th, 21st, 24th, 31st, 33d, and 38th
Portable Surgical Hospitals
607th and 894th Medical
Clearing Companies
408th and 410th Medical
Collecting Companies
XXX
San Carlos
Villasis
Aguilar
I CORPS
XIV CORPS
Agno River
Bayambang

MAP 13

XI Corps landed on the west coast near Subic Bay, with five hospitals in support, and headed inland to seal off the Bataan Peninsula; two days later elements of the 11th Airborne Division landed south of the capital city and advanced swiftly north. The *Manila Naval Defense Force*, against the orders of the Japanese Army commander, prepared to defend to the death the objective of these converging forces.[28]

Once known as the pearl of the Orient, Manila, with its population of about 1 million, sprawled over 100 square miles, bisected by the Pasig River. To the north lay important American objectives, including Santo Tomas University and Old Bilibid, where thousands of Allied captives were confined, while to the south lay the residential and business districts and the magnificent 400-year-old walled city called Intramuros. As the XIV Corps approached, the defenders blew up bridges and set whole sections of the city ablaze. On 4 February the Americans entered Manila, liberating 1,275 captives at the prison as flames threatened to envelop it, and on the next day a dash by the 1st Cavalry Division liberated 2,500 internees at the university as well. Finally, on the twenty-third 11th Airborne Division paratroopers, accompanied by a medical officer and several aidmen, jumped into the prison camp south of Los Banos to rescue the prisoners.[29]

In the city itself a month of pitiless combat left the 20,000 defenders and 100,000 civilians dead, either massacred by the Japanese or killed by American artillery. Strange scenes were recorded in a city where liberation and destruction arrived hand in hand. A medical administrative officer found crowds celebrating their deliverance while the city burned: "It was about 2100 hours. The further we got into the town the more brilliant was the orange illumination. Crowds of people lined the streets. From the balconies flags were draped. . . . Behind this scene of 'victory' the masses of giant flames rose high. The streets were as brilliantly lit by the reflection as Times Square in peace time [*sic*]."[30]

While the battle raged, the medics had three basic duties—to support the attackers, to assist the innumerable civilian victims of the fighting, and to aid the liberated prisoners, whose condition was fragile at best. The divisions in Manila, besides their organic units, were backed up by three evacuation and two field hospitals, plus separate collecting and clearing companies and parts of two medical battalions. Portable surgical hospitals moved frequently, some setting up in as many as six locations to keep abreast of the fighting.

The services of all units were badly needed. When the 37th Division stormed the Legislative Building, the clearing station of the 112th Medical Battalion became a "Grand Central of unloading ambulances, badly wounded soldiers,

[28]On the Eighth Army's contribution to the Luzon campaign, see John F. Shortal, *Forged By Fire: General Robert L. Eichelberger and the Pacific War* (Columbia, S.C.: University of South Carolina Press, 1987), pp. 105–13. After landing, the XI Corps came under the Sixth Army's control.

[29]Surg, 11th Airborne Div, Quarterly Rpt, Jan–Mar 45, pp. 1–3, HUMEDS, RG 112, NARA; Flanagan, *Angels*, p. 89.

[30]Quotation from 29th Evac Hosp Historical Rpt, 6 Feb 45, p. 6, file 319.1–2, HUMEDS, RG 112, NARA. See also Krueger, *From Down Under to Nippon*, pp. 235–70; Stanley A. Frankel, *The 37th Infantry Division in World War II*, ed. Frederick Kirker with John MacDonald (Washington, D.C.: Infantry Journal Press, 1948), pp. 291–96; Wright, comp., *1st Cavalry Division*, pp. 125–40.



TRANSPORTING CASUALTIES ACROSS MANILA'S PASIG RIVER

and battered Filipino civilians." In Manila's northern suburbs divisional medics had the difficult task of evacuating across the sluggish Calumpit River under fire from the east bank, where the enemy occupied houses and a church tower. M. Sgt. James B. Underwood dragged casualties off the muddy banks and maneuvered them into small dugouts that he pushed to safety, swimming amid geysers of muddy spray thrown up by mortar rounds. In eight trips he brought out twenty-eight, most of them wounded, a few dead.[31]

On 7 February the 71st and 29th Evacuation Hospitals arrived, and the 54th two days later. These units handled most of the 2,724 American wounded during the first half of the month. The 71st set up just north of Manila in an old slaughterhouse; the 29th entered Manila proper, where it worked in the Philippine Constabulary Academy for seven weeks, admitting close to 5,000 casualties in all, military and civilian; a mile and a half away the 54th took enemy artillery rounds during its first week working in the Santolan Tuberculosis Colony, treating internees liberated from Santo Tomas, Old Bilibid, and Cabanatuan prisons. Although members of the 54th

[31]Frankel, *37th Infantry Division*, pp. 266–67, 294 (quotation).

inhabited marble halls and airy, spacious rooms, patients and staff alike lacked such essentials as water and workable toilets—as did everyone in Manila.[32]

The other medical workhorses of the battle for Manila were the separate clearing companies. Soon after American forces entered the capital, the 893d Medical Clearing Company moved with PCAU 5 to Santo Tomas. Unlike other prisoners, who had been quickly evacuated from camps endangered by the fighting, internees here remained on the university grounds. The clearing company set up a small hospital in the Education Building and received its first patients the evening of 6 February. While the Philippine civil affairs unit provided the first decent meal tasted by the prisoners in many months, the medics worked with patients who were profoundly malnourished and suffered from deficiency diseases, including scurvy. Enemy shells fell on the university, frightening away potential civilian laborers, though casualties from street fighting just outside the compound were carried in for emergency treatment. Latrines were not functioning, because the city water supply had failed. Garbage and debris littered the grounds, and clearing company drivers trucked it away themselves, risking death in the streets during return journeys with water and food.[33]

By mid-February the Japanese were confined to areas south of the Pasig. Progress in the fighting throughout Luzon was reflected in the establishment of the Luzon Base Section in the capital city. A USASOS unit, the section used its 21st Evacuation Hospital to provide additional medical support. Opening at New Bilibid, 20 miles south of Manila, the hospital first served internees from Los Banos, but later began to take battle casualties from divisions fighting in southern Luzon. Casualties from the 11th Airborne Division also were treated by the 41st Field Hospital, which worked in Manila at Quezon City; and the 5th Field Hospital took over from a clearing company at Old Bilibid, treating a mixed array of Allied nationals and American Army nurses lately released, plus many Filipino civilians.[34]

Comparison is inevitable to conditions in conquered Germany a month or two later. There the high numbers of recovered military prisoners, slave laborers, and concentration camp inmates burdened the medical system greatly after the fighting had slacked off and the number of wounded had fallen. In the smaller foretaste at Manila, however, severe fighting coincided with the recovery of prisoners and the heaviest casualties among friendly civilians in the Pacific war. American medical facilities were hard put to handle the burden, although assistance from Filipino health care workers of all sorts provided early and welcome assistance, and evacuation removed many military casualties from the scene. The most difficult days came

[32]Rpt (copy), CO, 71st Evac Hosp, 11 Aug 45, sub: History of the 71st Evacuation Hospital, 11 January 1945–30 June 1945, pp. 1–5, file 319.1; Quarterly Rpts (copies), Jan–Mar 45, for 29th Evac Hosp, pp. 1–2, and 54th Evac Hosp, pp. 1–4, file 319.1; Rpt, Capt David G. Asherman, Med Dept Info Svc Field Off, OofCSurg, USASOS, 17 Feb 45, sub: Report of Activities—Manila, pp. 1–12, file 370 (Manila). All in HUMEDS, RG 112, NARA.

[33]893d Med Clearing Co Quarterly Rpt, Jan–Mar 45, pp. 1–2, file 319.1, HUMEDS, RG 112, NARA.

[34]See Quarterly Rpts (copies), Jan–Mar 45, for 21st Evac Hosp, pp. 2–3, 41st Field Hosp, pp. 1–2, 5th Field Hosp, pp. 1–2, and Surg, Sixth Army, pp. 20, 23, 26, file 319.1, HUMEDS, RG 112, NARA.



WARD OF THE 49TH GENERAL HOSPITAL, *set up in the Manila Jockey Club*

in March, when the Leyte hospitals were full and some of the Sixth Army installations were "filled far beyond their rated capacity." But that month, too, brought the end of fighting in Manila and the beginning of reconstruction.[35]

Moving the wounded out of the city was primarily the job of the separate collecting companies and amphibious medical battalions, which maintained the holding stations at airstrips from 8 February, when air evacuation from the capital region began. Thus the 409th Medical Collecting Company worked both at the Rosales strip in the city, where L–5s landed, and at the Quezon City strip northeast of the capital, used by C–47s to evacuate from Luzon. For a time the 264th Medical Battalion operated a convalescent hospital in a battered tuberculosis sanitarium; late in February the 227th Station Hospital took over, and the battalion moved to the Quezon airstrip to take on evacuation duties there. The arrival of the 49th General Hospital on 1 March, however, signaled a new stage in the treatment of casualties at Manila, where the end of the battle initiated the transformation of the devastated city from battleground to base.[36]

[35]Sixth Army, "Luzon Campaign," 3:158, CMH–L. The peak in evacuations on and from Luzon came in April, in response to rapidly increasing numbers of disease victims and fresh battle casualties from the mountains. On conditions in conquered Germany, see Graham A. Cosmas and Albert E. Cowdrey, *The Medical Department: Medical Service in the European Theater of Operations,* United States Army in World War II (Washington, D.C.: U.S. Army Center of Military History, 1992), pp. 550–78.

[36]See Quarterly Rpts (copies), Jan–Mar 45, for Surg, Sixth Army, p. 23, 409th Med Collecting Co, p. 2, 49th Gen Hosp, pp. 2–3, 227th Sta Hosp, pp. 1–2, and 264th Med Bn, pp. 1–2, file 319.1, HUMEDS, RG 112, NARA. See also Sixth Army, "Luzon Campaign," 3:158, CMH–L.

Manila Bay

Unlike the Americans in 1942, the Japanese *14th Area Army* commander, General Tomoyuki Yamashita, did not intend to have his 275,000 troops bottled up on the peninsula of Bataan. Instead, he meant to defend three mountainous areas in northern, west central, and southern Luzon. Americans had already encountered elements of one defending force, the *Shobu Group*, when they fought in the foothills after their Lingayen invasion, and another, the *Kembu Group*, near Clark Field. MacArthur, anticipating a possible replay of 1942, had ordered the Eighth Army's XI Corps to land on the west coast of the Philippines near Subic Bay, open the bay to Allied shipping, and move rapidly southward to seal off Bataan. Dug in athwart the route of advance were some 2,700 troops from the *Kembu Group*, in defenses hidden by impenetrable jungle growth.

The landing was easy, for some prime targets had already fallen to Filipino guerrillas. But when the Americans entered the hills, heading for Bataan, they ran afoul of the Japanese in a rough, tangled region called the ZigZag Pass. As the attack began, casualties quickly mounted. In three days (3–5 February) the 34th Regimental Combat Team, 24th Division, lost almost half as many infantrymen as it had during seventy-eight days of combat on Leyte. The battalion surgeon toiled "in a caldron of dirt and sweat and noise and tattered flesh, . . . a stranglehold upon his jangled nerves." Mortar and shell wounds filled the 18th Portable Surgical Hospital, set up on the main road near the western entrance to the pass. Trucks, jeeps, and ambulances brought in more; some supply vehicles dumped out rations on the road to make room for the wounded. At the portable a surgeon "patched up one man whose heart pulsed uncovered in his split-open chest." The 38th Infantry Division moved in, and the fight was renewed and extended. Supported by the 64th Portable Surgical Hospital, the 149th Regimental Combat Team, 38th Division, outflanked the pass, sending back its wounded by litter and by carabao cart until its own medics were able to hack a landing strip out of the jungle.[37]

Victory against a tenacious foe cost the XI Corps 1,400 casualties, and ZigZag was not cleared until 15 February—a bloody and ironic reminder to the Americans of how long a small force could hold up a large one in such country, and at what price.[38]

Almost undefended, Bataan itself fell easily, but substantial casualties were incurred in reconquering Corregidor. The attack had some tactical justification, for the isolated enemy garrison there could harass ships entering Manila Bay. But sentiment also played a large part in the decision to recapture the fortress, and a desire to do so with maximum drama may have influenced the choice of means: a coordinated parachute drop and amphibious assault. Drop zones were small, and surrounded by ruins caused by naval and air bombardment. Winds were unexpectedly brisk, and the troopers of the 503d Parachute Infantry were scattered, one

[37]Quotations from Richard J. H. Krebs [Jan Valtin], *Children of Yesterday* (New York: Reader's Press), pp. 327–28. See also Quarterly Rpts, Jan–Mar 45, for Surg, Sixth Army, pp. 19, 22–23, and 18th Port Surg Hosp, pp. 1–2, file 319.1, HUMEDS, RG 112, NARA.

[38]Smith, *Triumph in Philippines*, p. 330.



MANILA BAY CASUALTIES DISEMBARKING FROM AN LST AT CORREGIDOR

in every four suffering injuries on 16 February as a result of landing "on, in, and among buildings and trees away from the two fields [or drop zones]." Their medics jumped with them.[39]

With the advantage of numbers and surprise, the Americans confronted an entrenched and determined enemy. Further casualties quickly mounted from hits on landing craft as the 3d Battalion, 34th Infantry, came ashore. For the first thirty-six hours of fighting, the injured paratroopers and battle wounded of the 503d Regimental Combat Team were cared for at the regimental aid station, the only medical unit available on the island until the 18th Portable Surgical Hospital arrived from Bataan on the second day of the battle. Col. Frank J. McGowan, MC, the Eighth Army's surgical consultant, reached Corregidor on 18 March and combined the 503d's medics with those of the portable hospital. McGowan began to operate on the many compound fracture cases left by the jump; however, because of a lack of water and plaster, he was unable to make casts. Under the flood of wounded, plasma ran out as well. Calls for help were soon answered. Two volunteers loaded plasma into a tank destroyer and, in the midst of machine gun fire intermittently beating

[39]Quotation from ibid., p. 344. See also Frank J. McGowan, "Eighth U.S. Army," in B. Noland Carter, ed., *Activities of Surgical Consultants*, Medical Department, United States Army in World War II, 2 vols. (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1962–64), 1:571.

on the vehicle's armor, ran it from the beach along a winding road and over unsafe bridges to reach Topside, a plateau 400–500 feet above Manila Bay. Then they made the trip again for water, counting 200 bullet scars on the steel when the second trip was done.[40]

Utilizing underground passageways, the Japanese infiltrated at night, retaking positions they lost during the day. But the Americans made progress in a punishing contest, dynamiting tunnel entrances and calling in napalm and artillery strikes on the defenders. As their losses mounted, the Japanese resorted to their usual suicide tactics. A fierce counterattack in the predawn hours of 19 February was followed by scattered banzai charges that cost them heavily. Another 40 killed themselves by blowing up an ammunition dump, sending a score of American casualties into the portable with severe blast injuries. Worse was to come.

On 26 February, a little before noon, the Japanese detonated an underground arsenal at Monkey Point "amid scenes of carnage on both sides." A mile away one soldier was hurt by falling debris; flying rock struck a destroyer 2,000 yards offshore. "Bits and pieces of American and Japanese troops splattered the ground; rock slides buried alive other men of both forces." Medics worked for nearly two hours to clear the 150 American wounded, and a medical officer admitted: "As soon as I got all the casualties off, I sat down on a rock and burst out crying. I couldn't stop myself and didn't even want to. I had seen more than a man could stand and still stay normal. . . . When I had the cases to care for, that kept me going; but after that it was too much."[41]

In ten days of battle the Americans suffered more than 1,000 casualties, including 210 killed. The 18th Portable Surgical Hospital received a well-earned Presidential Unit Citation. Over the rubble flew the American flag, not quite three years after it had been lowered in surrender. The other fortified islands in Manila Bay fell soon after Corregidor. In this mostly symbolic victory for the Americans, 4,500 Japanese died and 20 surrendered.[42]

The Mountain Campaigns

Yamashita's decision to withdraw his main forces to the mountains of Luzon meant, paradoxically, that some of the hardest fighting followed attainment of the campaign's main strategic objectives. The medical problem on Luzon now resolved itself into aiding the construction of bases—MacArthur planned airfield complexes in the north and a major hospital center and a landing craft assembly plant on Batangas Bay, south of Manila—while providing support for the fighting units. Meanwhile, the Sixth Army's fighting forces were reduced, not only by the demands for manpower to construct and defend new bases but also by a shift of emphasis

[40]Rpt, Capt Robert M. Atkins, Supply Off, 503d RCT, 3 Mar 45, sub: Historical Record of Regimental Supply Section, 503d Regimental Combat Team, From 16 February to 2 March 1945, pp. 1–2, file INRG–503–4 (503d Prcht Inf Regt—S4 Rpt, Corregidor, 16 Feb–2 Mar 45), box 21305, Entry 427, RG 407, NARA; Quarterly Rpts (copies), Jan–Mar 45, for Surg, Sixth Army, p. 22, and 18th Port Surg Hosp, pp. 3–6, file 319.1, HUMEDS, RG 112, NARA; Krebs, *Children of Yesterday*, pp. 352–53; McGowan, "Eighth U.S. Army," in Carter, ed., *Surgical Consultants*, 1:571–72.

[41]Smith, *Triumph in Philippines*, pp. 346–48 (quotations).

[42]Ibid., pp. 349–50.

toward reconquest of the southern Philippines by the Eighth Army.

As a result, the remaining battles on Luzon were fought by American forces that were well supplied but either numerically inferior or not greatly superior to enemy units. To deal with the *Shimbu Group*, General Krueger sent the XIV Corps into the mountains east of Manila to recover dams that supplied a substantial part of the city's water. The fighting fell to the 1st Cavalry Division's 2d Cavalry Brigade and to the 6th Infantry Division (two regiments from the I Corps in the Central Plains and one regiment from the XI Corps on Bataan).

The 30,000 Japanese defenders of the beautiful but desolate highlands were, as usual, strongly entrenched in caves, with bunkered entrances, and were armed with mortars and artillery. Up to 14 March, when the XI Corps took command of the action, the XIV Corps suffered 1,335 casualties, of whom 295 died. The action was no less bitter thereafter. During the week of 15–22 March each of the four regiments in the line lost 50 to 60 a day; in 10 days the 2d Cavalry Brigade lost 60 killed and 315 wounded, against 500 known Japanese dead.[43]

As the Americans and their guerrilla allies moved deeper into the hills, fighting an endless series of small-unit actions, evacuation became ever more difficult. In response, portable surgical hospitals worked close to the front, moving often; four moved from four to ten times, and the least active moved three times to keep up with the troops. In May torrential rains fell, washing out the trails and the few roads, and exhausted litter-bearers had to be supplemented with other medics and Filipinos. Even with the portables working well forward, some casualties took twenty hours to reach surgical care. A few helicopters were available, transporting wounded from the front to division clearing stations that functioned, in effect, as small field hospitals, and L–5s helped to move the wounded back to Manila. There the evacuation hospitals—fixed hospitals now in all but name—awaited them. Casualty classification was the job of the 135th Medical Battalion, which established a thirty-day policy for the Sixth Army and routed more serious cases to the hospitals of the Luzon Base Section.

Not until 13–14 May did the most important dam fall, and pockets of enemy resistance continued to cause trouble until the end of June. But the enemy was near the end of his resources. In the mountains the familiar rule of Pacific warfare—that isolated forces could not survive under jungle conditions—resumed its course. Cut off from resupply, many Japanese perished from starvation and disease, and those who survived the campaign were little more than a nuisance at its end. Manila regained an adequate water supply, improving health there and aiding the city's redevelopment as a major port and Allied base. Similarly bitter actions in southern Luzon completed the ruin of the *Shimbu Group* as an effective fighting force.[44]

[43]Ibid., pp. 373, 384.

[44]Surg, Sixth Army, Quarterly Rpts (copies), Jan–Mar 45, pp. 24–27, and Apr–Jun 45, pp. 6–18; 135th Med Group Quarterly Rpt (copy), Apr–Jun 45, pp. 2–3. All file 319.1, HUMEDS, RG 112, NARA. See also Sixth Army, "Luzon Campaign," 3:158, CMH–L; [6th] Division Public Relations Section, *The 6th Infantry Division in World War II, 1939–1945* (Washington, D.C.: Infantry Journal Press, 1947), pp. 108–22; Wright, comp., *1st Cavalry Division*, pp. 144–56. The original strength of the *Shimbu Group* was more than 50,000, counting the forces south, east, and northeast of Manila. Of these, some 2,000 were captured during the fighting and 6,300 surrendered at the end of the war. All the rest perished.



LITTER-BEARERS EVACUATING WOUNDED FROM THE LUZON HILLS

Fighting in the North

Meanwhile, in northern Luzon the I Corps faced the largest of the enemy forces, the *Shobu Group*. With 110,000 troops and control of the fertile Cagayan Valley, General Yamashita hoped to put up a stout resistance. In early March the Americans moved against him, intending to break into the valley through the rugged Caraballo Mountains by way of Balete Pass. Aiding the original three infantry divisions—25th, 32d, and 33d—were five regiments of guerrillas organized and commanded by Col. Russell W. Volckmann. In some areas the campaign advanced quickly. The town of Baguio fell on 26 April to the newly arrived 37th Division, and the 25th Division, advancing along Highway 5, the best road in northern Luzon, was able to execute flanking movements and take Balete Pass on 25 May.

But elsewhere precipitous mountains, deep gorges, and forest thickets gave the defense a great advantage. The 32d Division, already battered in earlier fighting on Leyte and Luzon, climbed and fought its way up a narrow carabao track called the Villa Verde Trail, coursing over 6,000-foot ranges. The unit was forced by the terrain into one frontal attack after another. Evacuation and supply were difficult. The division secured the trail by 28 May, but at the cost of physical and psychological exhaustion.

Medical support was, for the Pacific, conventional—only the size of the

forces was remarkable. Fragmentation of units was inevitable in mountain country, and medical units followed suit, dividing as they had since the early days of the war. Before Baguio the 33d Division fought in companies over a wide front. Hence, battalion aid stations split in two; collecting companies, reinforced with clearing company personnel, set up provisional clearing stations, sometimes with portable surgical hospitals nearby and sometimes alone. On the Villa Verde Trail, on the other hand, the front was narrow and the 32d Division's clearing station and a portable leapfrogged each other as the division advanced. With heavy casualties and short distances the rule, medical support sometimes was uncommonly plentiful; on occasion, an entire collecting company backed up a single rifle battalion.

The vertical terrain, the narrow trails, the jungle, and the heavy rains spelled trouble for litter-bearers. Infantrymen and native laborers were called upon to lend a hand. Igorot tribesmen provided essential aid. Snipers harassed them all, and some aid stations had to provide smoke screens to shield approaching litter parties. Farther to the rear, consolidated litter-bearer trains moved at night under armed guard. Near Baguio, horse packtrains captured from the Japanese were pressed into service, and engineer bulldozers plowed new trails through trackless countryside.

Rather than attempt to move in such country, field and evacuation hospitals usually set up in school buildings, outside the combat zone. Even the I Corps' separate clearing and collecting companies stayed well back of the front lines, the former providing additional hospital beds, the latter managing rear-area evacuation, including both ambulances and holding stations at airfields the engineers carved out exclusively for medical use. Collecting companies also ran convalescent hospitals. Beyond the corps area, evacuation was easy, for a network of good roads stretched into the Central Plains, and aircraft helped to speed the wounded to hospitals at Lingayen and elsewhere. Evacuation hops, mainly by L–5s or the larger C–64s, were relatively short and a pilot might make twenty runs a day. Since all Sixth Army hospitals, except the 43d Field Hospital, were in the Central Plains or at Manila, ASCOM hospitals received the severely wounded.[45]

Once the American forces broke into the enemy's main larder in the Cagayan Valley, a rapid advance began that transformed the medical problem into one of keeping up. To support the fast-moving 37th Division, the division surgeon was obliged to uproot his office every two days. Division clearing companies still worked in platoons, each supported by a portable surgical hospital, but were unable to hold their casualties for long. Evacuation routes stretched out; for weeks after the breakthrough, ambulances carried the wounded on journeys

[45]See Quarterly Rpts (copies), Jan–Mar 45 and Apr–Jun 45, for 70th Med Bn, Surgs, 25th, 32d, 33d, and 37th Inf Divs, and Surg, I Corps, file 319.1, HUMEDS, RG 112, NARA. See also Sixth Army, "Luzon Campaign," 3:158, CMH–L; Krueger, *From Down Under to Nippon*, pp. 321–29; Eichelberger, *Our Jungle Road*, pp. 246–58; Frankel, *37th Infantry Division*, pp. 305–63; Harold W. Blakely, *The 32d Infantry Division in World War II* (Madison, Wis.: Thirty-Second Infantry Division History Commission, 1957), pp. 203–76; 33d Infantry Division Historical Committee, *The Golden Cross: A History of the 33d Infantry Division in World War II* (Washington, D.C.: Infantry Journal Press, 1948), pp. 225–37. First put into service in April by the 3d Air Commando Group, the C–64 carried four litter or seven sitting evacuees.



IGOROT WOMEN LITTER-BEARERS IN THE MOUNTAINS OF NORTHERN LUZON

that reached 100 miles, through the valley and over Balete Pass to the 36th Evacuation Hospital. As soon as possible, air evacuation began at captured airfields, the first opening on 15 June. Large enough for C–47s and C–54s, the three fields seized during the month quickly took the place of the long trek through the pass. Field hospitals, too, moved into the valley; the 91st set up in mid-June at Bayombong and the 43d at Cauayan, only two days after the infantry passed through. By the end of the month the 43d relocated to the town of Tuguegarao, now the medical center of the valley, with an airfield, the advance headquarters of the 70th Medical Battalion, and a growing medical supply depot. The fate of the enemy wounded, meanwhile, was grimly symbolized in the discovery of 200 dead Japanese in two Bayombong school buildings that had been used as hospitals. All had been killed by their own comrades to prevent them falling into the hands of the Americans.[46]

The main feature in easing the Allied medical burden was the rapid collapse of organized resistance in the lowlands. Neither the main forces in the Cagayan Valley, nor a task force operating on the

[46]Surg, 37th Inf Div, Quarterly Rpt, Apr–Jun 45, p. 4, file 319. 1, HUMEDS, RG 112, NARA. In loc. cit., see also similar reports for 70th Med Bn, 424th Collecting Co, 637th Clearing Co, 43d and 91st Field Hosps, and 24th Port Surg Hosp.

northwest coast to cut off Japanese escape routes, nor airborne troopers who dropped near Aparri at the point where the valley exits to the sea, suffered heavy battle casualties. Guerrillas cleared the coast, and the troopers met only a few enemy stragglers, as the Japanese withdrew into the mountains to continue resistance there.

As a whole, the Luzon campaign illustrated how well the medical service performed in the most diverse struggle of the Pacific war to date. Serious deficiencies in care occurred along the front lines, in large part because of the difficulty of reaching casualties quickly. But the characteristics of the Luzon campaign were the size of the forces engaged and the fierce continuous fighting. Hence, the most important aspect of medical care was the effectiveness of surgery, and this might best be measured by the incidence of gas gangrene infection—one half of 1 percent on Luzon as against 1 percent on Leyte.

The influence of the chief surgeon was an important factor. Denit pulled surgical teams, each consisting of one general surgeon, one orthopedist, and six surgical technicians, from the general hospitals and assigned them to the field and evacuation hospitals to improve the caliber of surgery near the front. Abundant supplies of penicillin, plasma, and whole blood—25,000 pints, including some from the United States by way of the Navy's blood bank on Guam—were received. Surgical consultants worked effectively, visiting field units to provide instruction and controlling the assignment of specialists. Finally, light-plane evacuation had obvious significance for speedy surgical intervention and hence for reduced risk of infection. Consultants traced mishandled cases back to the units responsible, and provided correction on the spot.[47]

The change in the character of the fighting, however, raised questions about some traditional ways of doing things. The jeep ambulance, essential in most Pacific campaigns to date, proved to be inferior to the light plane in the mountains and less useful than the conventional ambulance in the Central Plains of Luzon, where roads were good. The greatest change, however, was the declining usefulness of the portable surgical hospital, hitherto a key unit in the Pacific fighting. Wherever the ground was open, the portables lost much of their reason for being. As the surgeon of the 24th Division remarked, they were "difficult to fit into the chain of evacuation," and he combined his two portables to form an extra clearing platoon. In the Central Plains many portables served as surgical teams attached to the collecting companies of medical battalions.[48]

Perhaps traditions formed in earlier campaigns were part of the problem. Accustomed to attempt daring procedures, surgeons in portables had trouble adjusting to a more normal situation, where they did only emergency stabilizing procedures and sent their patients to larger hospitals for definitive care. Yet, in remote jungled regions, the portables continued to serve admirably

[47]Rpt, Trimble, 25 Dec 45, pp. 25–28; Rpt, Lt Col Frank M. Glenn, MC, OofCSurg, USASOS, n.d., sub: Notes on Surgery in the Forward Area of the Southwest Pacific, p. 10. Both in Historians files, HUMEDS, RG 112, NARA. See also Douglas B. Kendrick, *Blood Program in World War II*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1964), pp. 618–22.

[48]"Leyte: Historical Report of 24th Infantry Division," pp. 134–35 (quotation, p. 134), CMH–L; Rpt, Glenn, n.d., p. 10, Historians files, HUMEDS, RG 112, NARA.

as independent units, operating in the kind of terrain they were designed for. As late as May 1945, officer and enlisted medics backpacked equipment to perform major surgery on a five-day's walk into the mountains of Luzon.[49]

Despite all obstacles, evacuation both on and from Luzon was an overall success. The struggles of the litter-bearers on mountain trails demonstrated that, as ever, the first step was the hardest. Once off the line, however, the wounded were moved with speed and skill. Under the 135th Medical Group, four medical battalions—the 70th, 135th, 263d, and 264th—played key roles. At the corps level, they provided coordination and liaison among ambulance companies, collecting companies, and air and sea holding stations.

Air evacuation had never been more important. More helicopters might have made a significant contribution, but as matters stood the single-engine L–5s remained the most important device for transporting the casualty to the surgeon, especially in rough and jungled terrain. Ambulances and aircraft made more than 160,000 trips with casualties—ambulances, 130,000; C–47s, 12,000; L–5s, 18,000; and C–64s, 1,100. (Many of these trips, of course, carried the same evacuees on different legs of their journey.) Small planes were important, not only for moving the sick and wounded to hospitals but also for redistributing them to installations with available beds and to facilities with specialists skilled in handling particular injuries.[50]

Sea evacuation was in the hands of the two medical battalions, the 263d and 264th. Working through liaison personnel in hospitals and holding stations, the battalions evacuated the seriously ill and wounded to Leyte and, when hospitals there were full, to Biak. Hospital LSTs and medically equipped APAs and hospital ships carried them on slow journeys; increasingly, however, airplanes made similar trips with greater speed. In either case, the basic organization of the effort—liaison personnel, holding stations, medical battalions—was the same. Of the 37,716 casualties removed from Luzon between 9 January and 30 June 1945, 25,761 or 68 percent traveled by air and 11,955 or 32 percent by water. Both forms of evacuation declined after May, as the growth of hospital complexes in the Philippines allowed more cases (even the more serious ones) to be retained there.[51]

The Reconquest Completed

While the Luzon campaign raged to the north, the soldiers of General Eichelberger's Eighth Army moved rapidly to open the sheltered water route through the islands to the south. His veterans conquered the islands of Palawan, Panay, Negros, Cebu (where fighting was especially bitter), and Bohol, as well as the Zamboanga Peninsula of the primitive southern island of Mindanao. The campaigns were marked by speed, tactical skill, and comparatively low casualties. However, when the Eighth Army launched a drive

[49]Rpts, Trimble, 25 Dec 45, pp. 26–27, and Glenn, n.d., pp. 10–11, Historians file, HUMEDS, RG 112, NARA.

[50]M. J. Musser, Jr., and Emmett C. Townsend, "Use of Small Air Planes for Medical Evacuation on Luzon," *Bulletin of the U.S. Army Medical Department* 4 (Aug 45): 191–96.

[51]See Quarterly Rpts (copies), Jan–Mar 45, for Surg, Sixth Army, pp. 34–35, 135th Med Group, pp. 5–8, 54th Evac Hosp, p. 2, and Surg, I Corps, pp. 34–35; ibid., Apr–Jun 45, for 70th Med Bn, pp. 3–6, 135th Med Group, pp. 1–4, and Surg, Sixth Army, pp. 4, 25–26, and an. 2. All file 319.1, HUMEDS, RG 112, NARA.

against the remainder of Mindanao, its forces encountered a more difficult test.

Mindanao was almost as large as Luzon. Its harsh topography is dominated by a volcanic mountain range, with peaks rising to 9,000 feet. The interior was heavily jungled, although grasslands, coconut groves, and nipa palms covered the coastal plains. Roads were few and poor. But a lively guerrilla movement under Col. Wendell W. Fertig, a U.S. Army reservist, already controlled much of the island's outback. The main Japanese defenses had been laid out around the capital of Davao, the shores of Davao Bay, and roads leading back to the interior along which the enemy hoped to conduct a fighting retreat. Declining to meet such defenses head on, Eichelberger instead landed elements of the 24th and 31st Infantry Divisions at Illana Bay on 17–22 April. A Medical Administrative Corps officer recorded his impressions of the landing: "Dawn is not far off. Light begins to creep into the sky. The black silhouettes of the sailors, busy about the ship, take form. . . . The vast convoy glides steadily forward in battle formation. Flags have all been raised to full mast." In the wake of the naval bombardment the 24th Division swarmed onto an undefended shore; the medical flag went up at the 263d Medical Battalion, and a few injured began to gather for treatment. As the push inland began, a Japanese sniper shot the 21st Infantry commander in the back; an ambulance driver then killed the sniper—perhaps the first enemy blood of the campaign drawn by a medic.[52]

Approaching Davao overland, the Americans took the enemy in the rear and seized the town in ten days. So far the main medical problem was keeping up with the speed of the advance, chiefly along navigable rivers. Now, however, began a month-long struggle that recalled northern Luzon, except that the enemy's forces were less formidable and less ably led. Near Davao the Japanese were entrenched in fortified caves and concealed dugouts. As the 24th Division assaulted these positions, two field and two evacuation hospitals were inundated with casualties and had to use expansion beds for the overflow of not only the wounded but also, increasingly, the sick.

Ample whole blood and penicillin saved many lives, but delivering it was sometimes a hair-raising adventure. A party of medics made a daring midnight jeep-run to deliver whole blood to a portable. "Quite blinded" by the lights in the closed operating tent, they found doctors and corpsmen working over a man hit by mortar fire; surgical technicians lay in exhausted sleep on the dirt floor, "too tired to find their own quarters." The dangerous trip seemed something of an anticlimax, for volunteers had already given their own blood to the wounded. But when the medics set out to return to their unit, the Japanese ambushed them on the jungle road. Their own wounded got the blood they had brought for others.[53]

Evacuation from the island was rapid. Large airstrips were seized or built and, beginning on 27 April, C–47s were able to relieve the burden on local units by carrying some 3,800 wounded to Leyte.

[52]Rpt, Capt David G. Asherman, Med Dept Info Svc Field Off, OofCSurg, USASOS, 13 May 45, sub: Report of Activities—V–5 [Mindanao Task Force], sec. 1, pp. 3 (quotation), 5, file 370 (Mindanao), HUMEDS, RG 112, NARA.

[53]Ibid., 8 Jun 45, sub: Report of Activities—V–5, sec. 2, pp. 3–5 (quotation, p. 4), file 370 (Mindanao), HUMEDS, RG 112, NARA.



PULLING A MINDANAO LITTER CASUALTY ACROSS A DEEP RAVINE

But land evacuation, from the 24th and 31st Division units advancing across the interior, was marked by all the scenes of exhaustion, tedium, and danger of the earlier Pacific battlefields. Distances were long, roads poor, bridges blown, with the terrain changing to a series of steep ridges that had narrow and winding paths in dense jungle growth. As the downpours of May swelled streams and brought rivers above their banks, the wounded moved by small boat, by artillery caterpillar and trailer, and by water buffalo. Many medics believed that only the L–5 kept the system working.

Nevertheless, despite all efforts, collecting companies often had to serve as de facto hospitals, and portables again became holding units—as they had on New Guinea—keeping the wounded for as much as two weeks. Though battle casualties began to fall off after 10 June, when effective Japanese resistance ceased, medical cases mounted rapidly and refilled the beds vacated by the wounded.[54]

[54]Surg, Eighth Army, Annual Rpt (copy), 1945, encl. 9, pp. 4–5, file 319.1–2; Quarterly Rpts (copies), Apr–Jun 45, for Surg, X Corps, pp. 2–3, 8–9, Surg, 24th Inf Div, pp. 3–4, 26, 30th Evac Hosp, p. 2, and 99th Evac Hosp, pp. 7–9, file 319.1. All in HUMEDS, RG 112, NARA. See also "Report of the Commanding General, Eighth Army, on the Mindanao Operation," pp. 162–64, CMH–L.

The Impact of Disease

Indeed, on both Luzon and Mindanao the health record of the Army left much to be desired. The Filipino population, in poor shape after years of occupation marked by food shortages and neglect of public health, formed a reservoir of disease. The people were friendly, mingled freely with their liberators, and shared their food with them. (The troops had field rations to eat, but native dishes were an overwhelming temptation on grounds of taste.) Diarrheal diseases spread in response to swarming flies, poor sanitation, and contaminated food and water. American troops counted almost 10,000 cases of infectious hepatitis, probably spread by feces. Venereal disease increased rapidly, for the local women were both attractive and needy, the soldiers too long continent, and the usual measures of control unenforceable while fighting raged.

The environment contributed its own ills. American forces recorded some 2,000 cases of dengue, as well the usual distressing skin infections. The exhaustion and stress of continuous combat made all other problems worse. Psychological causes accounted for about 20 percent of the total casualties among combat divisions of the Sixth Army. As had now become usual, medics held such cases in the clearing stations or in rest or casual camps near the front, sharply reducing personnel losses suffered in earlier campaigns. Indeed, in the last year of the war preventive neuropsychiatry at last came into its own despite a continuing shortage of specialists in the field.[55]

Malaria, not a significant hazard since 1943, returned in strength during the Luzon and southern Philippines campaigns. Both on Luzon and on Mindanao the disease was well established. Yet a major source of illness lay in the bodies of the veterans themselves. Atabrine discipline, as ever, proved hard to enforce in combat, and weariness and unrelenting danger speeded relapses among those who already carried the infection. As the Sixth Army surgeon remarked, "It is not unlikely that a good many troops deliberately evaded the taking of atabrine in the hope that an attack of malaria would take them to the comparative luxury of a hospital." Indicative, too, was the rapid decline of the disease after the fighting ended in June. On Mindanao the incidence began to rise about 22 May and continued through June. About a third of those afflicted admitted not taking Atabrine, either because it could not be obtained on remote patrols or because they hoped to gain a few days' rest in a hospital. As on Luzon, the breakdown of malaria discipline was progressive, growing worse as combat was prolonged.[56]

Such conditions helped to make medical care during the Philippine campaign a paradox. The medical service was well endowed, capable, and experienced, and yet the Sixth Army had the worst disease record since the Seventh Army on Sicily, more than a year before. The comparison is suggestive, for in both cases Americans fought campaigns of European intensity and scope in a hot climate and a malarious region with a variety of insect-borne diseases.

[55]On preventive neuropsychiatry, see, for example, Surg, 41st Inf Div, Quarterly Rpt (copy), Jan–Mar 45, pp. 10–15, file 319.1, HUMEDS, RG 112, NARA.

[56]Quarterly Rpts (copies), Apr–Jun 45, for Surg, Sixth Army, p. 22 (quotation), and Surg, X Corps, pp. 6–7, file 319.1, HUMEDS, RG 112, NARA.

Preventive medicine, facing conditions that were partly primitive, partly urban, and wholly disordered by war, regressed even as surgery and evacuation had an excellent record.[57]

General MacArthur declared the Mindanao campaign over on 20 June and, ten days later, the Luzon campaign. The Eighth Army inherited the mopping up on Luzon, which proved to be a formidable task against mountain redoubts defended by so able a tactician as General Yamashita. Commenting on what he called the "illegitimate child known as 'mopping-up,'" Eichelberger had remarked at Leyte: "The only difference between a big fight and mopping-up is that when victory is obtained nobody can call it that." Nevertheless, the numbers of both wounded and sick declined sharply, as the Philippine battleground became a staging area for the invasion of Japan.[58]

Amid the scenes of victory and reconstruction, the tragedy of Bataan and the medical disasters of the early years of the war in the Philippines faded from view. And yet from guerrillas and liberated prisoners Americans were learning much about the struggle to survive that had gone on behind enemy lines—and, in areas controlled by the Japanese, still continued. While the medical establishment of the armed forces had been growing to unprecedented size and sophistication, medicine of the most primitive sort had often been the sole reliance of Allied personnel under enemy control.

[57]Surg, Sixth Army, Quarterly Rpts (copies), Jan–Mar 45, pp. 21, 28–33, and Apr–Jun 45, pp. 20–25, file 319.1, HUMEDS, RG 112, NARA. Despite the similar environment, the Eighth Army's record was better than the Sixth's because its campaigns were shorter and enemy resistance was less intense.

[58]Jay Luvaas, ed., *Dear Miss Em: General Eichelberger's War in the Pacific, 1942–1945* (Westport, Conn.: Greenwood Press, 1972), p. 172. A brief account of the development of the Philippines as a medical center for the western Pacific will be found in Chapter XIII.

CHAPTER XI

Behind the Lines

Despite the crushing defeats suffered in 1942 at Bataan and Corregidor, forces loyal to the United States and the prewar government retained control of many remote and mountainous areas in the Philippines. After an initial period of fairly benevolent rule, the Japanese regime that dominated the rest of the islands adopted policies that encouraged armed resistance, and its occupation forces embarked on campaigns of repression that sometimes degenerated into reigns of terror, marked by rape, looting, and torture. Inevitably, such behavior drove many to join the existing guerrilla forces and caused new bands to spring up.

The Guerrillas

For three years a twilight army, ultimately numbering some 200,000 men and women, survived without regular sources of medical supplies or skilled treatment. The guerrillas' lives were far from easy, and the combination of jungle living, lack of medicines, insufficient food, and constant uncertainty broke down the health of many. Especially hard hit were the Americans who joined the movement. Lt. Donald D. Blackburn and Major Volckmann, two Americans who refused to surrender on Bataan, evaded capture and fled into the jungle only to fall violently ill with nausea and diarrhea. Then malaria caused them to run "the full gamut of misery, shivering and shaking so hard that their teeth chattered." They became jaundiced; Volckmann developed beriberi. A camp of Americans in hiding, where they found temporary refuge, was disorderly, squalid, and swept by recurring outbreaks of dysentery. Problems of health, order, and command among the dispirited remnants of these defeated forces were inextricably entwined from the beginning.[1]

Resistance to Japanese rule took form spontaneously in a patchwork of groups, whose commanders might be Filipino or American soldiers, local leaders or malcontents, or mere bandits. Such groups numbered in the hundreds. For medical care, most guerrillas continued to depend upon the aid of courageous and sympathetic civilians. A hospital might mean an abandoned house or a grove of trees; treatment, the surreptitious aid of a local doctor or nurse. Some physicians made horseback visits after dark to the mountain strongholds of guerrilla units.

[1]Philip Harkins, *Blackburn's Headhunters* (New York: W. W. Norton and Co., 1955), pp. 49–61 (quotation, p. 49).

The National Psychopathic Hospital near Manila provided medical treatment to guerrillas who came to its doors, and sympathetic staff members diverted quinine and other critical supplies to resistance leaders. Japanese medical supplies were captured in raids. Supply from Australia was slow to develop and never abundant, but small quantities of quinine, sulfa drugs, and bandages arrived by submarine.

The essence of guerrilla life, however, was making do with little, and most fighters continued to depend on expedients. A nurse later recalled making surgical dressings by boiling old clothes and using coconut shells for spoons and dishes and sections of bamboo for drinking cups. Ultimately, guerrilla survival during the early years was a Darwinian process. The unfit died, and the survivors endured hunger, disease, and infection with a tenacity they could not have imagined in their previous lives as civilized people.[2]

As the war turned against Japan and the resistance movement spread and matured, some larger units (especially during 1944) developed fairly elaborate medical establishments. No overall pattern existed, despite the efforts of General Headquarters, SWPA, to learn about the resistance, provide supplies, extract information, extend recognition to reliable commanders, and foster unity on a regional basis. The resistance leaders who hammered together coherent organizations, however, thought in terms of conventional military structures and sought to model their forces on the prewar Philippine Army. The best of these mature organizations were ready, when the Americans landed, to join the fight against the Japanese as important auxiliary forces.[3]

The largest single group developed on the southern island of Mindanao. On the big primitive island, with its complex of tribes and religions, General Wainwright's order to surrender was obeyed erratically at best. Thousands of Philippine Army soldiers and probably 100–200 Americans—officers, enlisted men, and civilians who resided on the island before the war—simply disappeared into the hills. Armed resistance began as a folk movement to which the Americans, many of them ignorant of the languages and customs of the place, at first could contribute little. Many died in the jungle of malaria or starvation; others were killed by wild pagan tribes or by the Moros—Moslem inhabitants of the mountains, who loathed the Christian lowlanders and had never fully accepted American, or even Spanish, rule.

Some Americans found friendly villages and hid out, content to escape the war; others joined refugee camps in the rainforests. Colonel Fertig called one such camp a "wet hole in the jungle," where twenty or thirty onetime soldiers and sailors lived a precarious existence. Other USAFFE soldiers joined in the

[2]Ibid., pp. 321–25; Alice R. Clarke, "Guerrilla Nurse: The Story of a Nurse Who Served With the Philippine Army," *American Journal of Nursing* 45 (Aug 45): 598–600; Russell W. Volckmann, *We Remained: Three Years Behind Enemy Lines in the Philippines* (New York: W. W. Norton and Co., 1954), pp. 120–28; Jesus A. Villamor, *They Never Surrendered: A True Story of Resistance in World War II* (Quezon City, P.I.: Vera-Reyes, 1982), pp. 117–19. See also documents in file 275–3, box 367, Philippine Archives, Record Group (RG) 407, National Archives and Records Administration (NARA), Washington, D.C..

[3]For a comprehensive discussion of groups and leaders, see General Headquarters (GHQ), Far East Command (FEC), "The Guerrilla Resistance Movement in the Philippines," Intelligence Series, vol. 1, pts. 1 and 2, U.S. Army Center of Military History Library (CMH–L), Washington, D.C.



GUERRILLAS AND AN INFANTRYMAN CARRYING A CASUALTY *through a sniper-infested area on Luzon*

disorder of the time, helping themselves to food and women by using their weapons in the anarchy that followed the breakdown of the colonial administration. The first coherent bands emerged for reasons that the founders of feudal Europe would have understood—the need to establish local security, to obtain food, or to settle grudges.[4]

Some Americans emerged as leaders of these groups. Because the United States had guaranteed the postwar independence of the Philippines, Americans were able to stand apart from the struggle of factions and individuals for power. Many possessed useful military and organizational skills. Colonel Fertig was a mining engineer who had come to the island during the thirties. Firm, aloof, with a gray-streaked red goatee that became his trademark, he proved able to master difficult logistical and administrative problems. As he began to consolidate the resistance, soldiers "sick from malaria, hunger and exposure, were drawn to the beacon" of his leadership.[5]

[4]Quotation from John Keats, *They Fought Alone,* (New York: J. B. Lippincott Co., 1963), p. 77. See also Larry A. Schmidt, "American Involvement in the Filipino Resistance Movement on Mindanao During the Japanese Occupation, 1942–1945" (M.A. thesis, U.S. Army Command and General Staff College, Fort Leavenworth, Kans., 1982), pp. 74, 79, copy in CMH–L.

[5]Schmidt, "Resistance Movement on Mindanao," p. 92, copy in CMH–L.

At first almost ignored by the Japanese, the guerrillas under Fertig's leadership developed an impressive organization. Administrative districts were set up, each with a controlling military unit; civil government was reestablished and civil law prevailed, subject to military law in case of conflict. Soon more than 90 percent of Mindanao had become, in effect, an Allied enclave behind enemy lines. General Headquarters, SWPA, estimated a force of about 38,000 guerrillas under Fertig's command, plus seventy radios and four airfields, and in February 1943 recognized his organization as the 10th Military District. In 1944 Mindanao became a focal point for the distribution of supplies to guerrillas on the northern islands.

Fertig's staff was elaborate, with G–1 through G–5 sections, and an adjutant general, an engineer, a quartermaster, and a signal officer. His medical organization, on the other hand, was loose. Filipino doctors were awarded officer rank, and each continued to work in his own district; small hospitals were established in secure areas to handle severe cases. Many people under Fertig's control continued, as in the past, to depend largely upon *practicantes*, irregular healers that an American called "the local witch doctors."[6]

Even trained physicians had little to work with. One of Fertig's subordinates termed a field hospital "just a quiet place to die, because there's almost no medicine and damn few surgical tools. . . ." A single trained Filipino surgeon practiced on Mindanao, but equipment was not to be had. Lt. Jack Hawkins, USMC, who escaped from the Davao Penal Colony and joined the guerrillas, later recalled that maintaining the health of his soldiers was a problem "impossible of solution. . . . I remember one poor fellow who came to our headquarters with his right arm black to the shoulder with gangrene. Doc Munoz, our guerrilla surgeon had to remove it. There was no anesthetic."[7]

Fortunately, during much of the occupation, fighting was at a minimum, for the guerrillas, in line with SWPA policy that desired intelligence above all, sought to evade rather than engage the Japanese. As the threat of an American invasion grew, however, the Japanese garrison lost its tolerance of the guerrillas and launched campaigns to exterminate them. Enemy pressure then compounded all the medical problems that were rooted in the environment of Mindanao.

Disease was pervasive, especially vivax malaria, which affected virtually the entire organization to some degree. The guerrillas controlled the Del Monte Plantation, where the director of forestry in the prewar government had planted 11 million cinchona trees. Fertig's men boiled cinchona bark or

[6]Quotation from Interv (telephone notes), Albert E. Cowdrey with James L. Evans, MD, 18 Aug 89, Historians files, Historical Unit Medical Detachment (HUMEDS), RG 112, NARA. See also GHQ, FEC, "Guerrilla Resistance Movement," vol. 1, pt. 1, p. 85, CMH–L; M. Hamlin Cannon, *Leyte: Return to the Philippines*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1954), p. 16.

[7]First quotation from Keats, *They Fought Alone*, p. 205. Keats' book is informative but not strictly history; though composed with Fertig's assistance, and perhaps based upon his unpublished memoirs, it contains lengthy conversations that apparently were made up either by Keats or by Fertig himself and may or may not represent what was actually said at the time. However, in Interv, Cowdrey with Evans, 18 Aug 89, Historians files, HUMEDS, RG 112, NARA, Evans termed it substantially accurate. Second quotation from Jack Hawkins, *Never Say Die* (Philadelphia, Pa.: Dorrance and Co., 1961), p. 167.

ground it into powder to make a pill—primitive expedients, and not very effective. More dangerous to life were respiratory diseases. Influenza was a common illness, and the pneumonia that followed it frequently fatal; tuberculosis was widespread and life-threatening. Guerrillas in flight from Japanese patrols treated their own injuries as best they could, using picric acid from the detonators of Japanese mines on tropical ulcers. Scarcely believable stories were told of some desperate expedients—an Australian named Jock McLaren, for example, performed an appendectomy on himself with only a mirror and a razor blade; five days later he escaped a Japanese patrol, carrying his appendix in a bottle.[8]

SWPA medical support, like Japanese pressure, increased as the war went on. During 1943 and 1944 supplies arrived by submarine every three months or so. Medicines, including sulfa drugs and Atabrine, were an essential part of the cargoes delivered to obscure points on the long Mindanao coastline. Overall, quantities were small. One writer has calculated the total of supplies delivered by submarines at only 6 pounds per man per year for the Mindanao guerrillas, and medical supplies apparently constituted only about 8 percent of an average cargo.

Yet SWPA's contribution to medical supply on Mindanao was absolutely essential on qualitative grounds. During 1944 medical supplies were second only to ordnance in priority, and were neither heavy nor bulky. Much arrived that the guerrillas could not provide themselves, no matter how ingenious they might be. Submarines also took chronically sick Americans to Australia, perhaps the most tenuous evacuation route of the Pacific war.[9]

A submarine also brought Fertig, in November 1943, the man who was to be his friend, housemate, and force surgeon until early 1945. Capt. James L. Evans, MC, was the stock record officer at the 3d Medical Supply Depot in Brisbane when he joined the staff of SWPA's Allied Intelligence Bureau as medical adviser. A 32-year-old general practitioner, and a ham radio operator by hobby, he selected and forwarded medical supplies to guerrilla units, until his varied talents caused Brig. Gen. Charles A. Willoughby of MacArthur's staff to send him to Mindanao in November 1943. He arrived on the huge USS *Narwhal*, which was loaded for the trip with 90 tons of supplies that included 1.2 million tablets of Atabrine and 800,000 of quinine. Evans quickly learned to admire Fertig and became both the force surgeon and commanding officer of the radio section, giving about half his time to each.[10]

As signalman, Evans made technical improvements that resulted in round-the-clock radio communications with Australia. As a doctor, he performed the varied duties of a general practitioner of the time, including simple surgery. And as staff surgeon, he established clinics to serve the local people, sought to regularize the loose medical organization, and was gratified to see improved care bring the double benefit of enhanced morale among the fighters and warmer

[8]Schmidt, "Resistance Movement on Mindanao," pp. 129–30, copy in CMH–L.

[9]Ibid., pp. 179–80, 184, copy in CHM–L; Interv, Cowdrey with Evans, 18 Aug 89, Historians files, HUMEDS, RG 112, NARA.

[10]Interv, James L. Evans, 29 Jun 56, file 000.71, HUMEDS, RG 112, NARA.

relations with the civilians. The medical statistics of the operation, however, remained a mystery. Evans' efforts to obtain written reports on sanitation and disease brought in a sheaf of missives in broken English and a variety of local dialects. He later recalled: "I even once got a monthly sanitary report written with wry appropriateness on half a roll of toilet paper."[11]

He became an able and professional observer of guerrillas and their ways, a taste that later caused him to specialize in psychiatry. Viewing their fears and phobias, he noted in himself a horror of being bombed, but none of the jungle; in another guerrilla, terror of a Japanese attack by land, but none of being bombed. One American seemed to fear the possibility of appendicitis more than the enemy. Another hoarded Atabrine against the time when, in flight in the jungle, he might not be able to obtain more. Yet Evans rejected the notion, then popular, that psychopathic personalities were especially drawn to irregular warfare. A measure of objectivity and even of intellectuality was needed to accept and triumph over conditions of life at which the flesh rebelled. A self-selected group, Fertig's men had refused to surrender. Evans considered them, by and large, a stable and closely bonded lot, capable of effective action in the most difficult circumstances.[12]

His most important contribution to Fertig's guerrillas may have been neither as doctor nor communications specialist, but rather as a medical supply expert. Evans developed a list of requirements that was, in effect, a medical maintenance unit tailored to guerrilla needs. Included were chemotherapeutic agents against malaria and yaws and a surgical kit, wrapped in a canvas roll, that met one of the most persistent and critical deficiencies of the resistance forces. The size of every item was designed to fit through a submarine's hatch. Once General Headquarters, SWPA, accepted the list, Evans could requisition as many units as he needed, use them to supply the loose regional medical organization, and even provide some help to the civilians on whose goodwill survival ultimately depended.[13]

Other guerrilla leaders made do with medical organization as loose as Fertig's, but with no Evans at the center. On central Luzon the guerrillas, led by Col. Marcus V. Augustin, whose nom de guerre was Marking, assembled a secret medical detachment to care for the sick in their mountain hideouts, where the chief complaints were skin diseases and malaria. Not a real unit, the detachment was composed of civilians, former Philippine Army medical officers, and nurses who provided part-time assistance while carrying on their normal occupations. Marking's guerrillas picked up medical supplies, including instruments, from submarines. Then the medical detachment members, dressed as laborers, carried the items into Manila, where many worked, and they established in the mountains a military hospital that later moved to the Pasig River when the battle for the capital was raging. Here the detachment, no longer secret, drew supplies from the 43d Infantry Division's 118th Medical Battalion and treated both wounded

[11]Ibid.
[12]Ibid.
[13]Ibid.; Interv, Cowdrey with Evans, Historians files, HUMEDS, RG 112, NARA. See also Keats, *They Fought Alone*, pp. 300–36.

guerrillas and injured civilians. When the fighting ended, the Filipinos transferred their remaining casualties to a U.S. Army evacuation hospital.

This pattern—a part-time medical organization that turned into a functional unit only after the American forces arrived at Lingayen—apparently was repeated in other groups. Some arrangements were even more casual. Thus a professor from the College of Medicine, University of the Philippines, later claimed to have aided the obscure (and by SWPA unrecognized) Filipino-American irregular troops on Bataan. Yet the professor continued to teach throughout the war, and his "unit" never entered combat. But other and tighter organizations existed on Luzon; several recognized medical units, for example, served with future Philippine President Ramon Magsaysay's Zambales Military District. The Communist-led Hukbalahaps, whom Magsaysay would later defeat in a postwar civil conflict, were also well organized and effective. They divided the region of Luzon that they controlled into five military districts, and an American who served with a "Huk" battalion later recalled that his unit had its own "intelligence, communication, ordnance, medical, and maintenance support systems."[14]

Similar organization characterized other guerrilla bands, although the real effectiveness of their medical support (as of many other activities) is sometimes difficult to assess through the mist of wartime claims and postwar romanticizing. The western Leyte guerrilla warfare forces of the controversial Blas E. Miranda apparently had the form of a prewar division, with a division surgeon and regimental surgeons. Miranda claimed to possess "one of the best hospitals ever built in the Visayas by any guerrilla organization," where major and minor surgery was performed on "officers, enlisted men and civilians." As was the case elsewhere, civilian doctors and nurses contributed their services part-time. A chemist tried to find ways to substitute local herbal medicines for drugs that could not be imported, and an ordnance shop fabricated surgical instruments. The guerrillas encouraged civilian public health, and a veterinarian inspected the local barrios to check for animal diseases. Other organizations on Leyte called in local physicians to treat their forces and provided rudimentary instruction to "first aiders" selected from the ranks to form medical platoons. The first submarine shipment of medical supplies reached Leyte in mid-1944, though the question of how they were distributed among the competing resistance groups remains unclear.[15]

Unique in many ways was the organization established on Luzon by Volckmann and Blackburn. Despite their early troubles, the two escaped from the Japanese and, aided by the supposedly anti-American Hukbalahaps, crossed the Central Plains and found a refuge in the northern mountains among the head-hunting Igorots.

[14]Quotation from Donald Knox, *Death March: The Survivors of Bataan* (New York: Harcourt Brace Jovanovich, 1981), p. 371. See also documents in files 110–61, 275–2, and 309–84, box 367, Philippine Archives, RG 407, NARA. Marking's guerrillas also put in excellent service for the Sixth Army at the Ibo Dam. Hukbalahap is an acronym derived from Tagalog words meaning People's Anti-Japanese Army.

[15]Elmer N. Lear, "The Japanese Occupation of the Philippines: Leyte, 1941–1945," Data Paper no. 42 (Ithaca, N.Y.: Department of Far Eastern Studies, Cornell University, 1961), pp. 188–92 (quotations, p. 189).

Along the way Blackburn recorded in his diary their various health problems, ranging from enduring malarial attacks to plucking leeches out of their eyes. In the mountains the two Americans patiently put together a guerrilla organization dedicated, like Fertig's, to surviving, lying low, and gathering information. As time went by, Japanese brutality nourished the resistance; so did Filipino courage. The head of a civilian dispensary falsified his records and sent medicine, along with highly accurate intelligence; and Blackburn, with much experience of his own misfortunes to draw upon, became the "doctor" at Volkmann's headquarters.

Primitive measures remained the rule. Blackburn cured himself of an infected heel by walking barefoot until the trouble cleared. Some illnesses were treated by animist priests or magicians. Volckmann appeared to recover from an illness after two local witches prayed over him—perhaps, Blackburn speculated, because the ritual distracted the sick man from his troubles and showed him "that even strangers sincerely wanted him to get well. Mind over matter?"[16]

Despite all obstacles—some created by bandits calling themselves guerrillas—the cool, literal-minded Volckmann worked out the structure for a small but professionally organized army in being, unable to engage the Japanese forces but well able to control the countryside. Dominating the prewar 1st Military District in northern Luzon from the spring of 1944 on, his United States Army Forces in the Philippines, Northern Luzon (USAFIP-NL), was in effect a division headquarters that boasted an executive officer; G–1, G–2, and G–4 staff sections; seven sector commands (two of which were under Blackburn); and a total complement of about 8,500 officers and enlisted men. Volckmann had a Filipino staff surgeon, and on 7 October felt strong enough to establish a medical SOP for his forces. But obtaining doctors for the troops was a difficult task until his forces were able to expand out of their mountain redoubts to the valley towns, where most physicians lived. By March 1945, however, the USAFIP-NL had a medical battalion of 98 officers and 808 enlisted men, organized into eight hospital companies.[17]

Such relative opulence came but slowly. Blackburn, commanding a regiment, recorded that his medical section originally consisted of a doctor and a nurse. By 1945 guerrilla organization and prestige had improved; in the town of Tuao "he found two first-class physicians, Jacob Pena and Juan Asuncion, and one topflight surgeon, Gonzalo Cabalquinto." With these doctors he "was finally able to organize a badly needed medical department," which he divided into two sections, fixed and mobile. Pena supervised the building of four base hospitals, two in each of Blackburn's districts. The largest stood at Manauan, a few miles from Tuao—a structure with a thatched roof and floors, containing an emergency room, operating room, and several wards whose sixty beds were "closely woven of

[16]Harkins, *Blackburn's Headhunters*, pp. 159, 168 (quotation).

[17]SO 93, 7 Oct 44, Medical Organization, file USAFIP-NL, box 258, Philippine Archives, RG 407, NARA; Historical Records Section, G–3, United States Army Forces in the Philippines, Northern Luzon (USAFIP-NL), "After-Battle Report: North Luzon Operations," p. 5, file Geog S—Luzon 370.2, CMH.

bamboo strips." The mobile section under Asuncion was a medical company, comprised of a collecting platoon and three aid stations. Each station followed a battalion in combat.[18]

Seemingly, equivalent arrangements were made in the other sectors. In each an organization loosely based on the prewar Philippine Army regiment was set up. Field hospitals were organized, each, according to Volckmann, with 6 doctors, 1 dental officer, 6–14 nurses, and 70 enlisted men, augmented when necessary by civilians. The question of supplies for this establishment is difficult to clarify. Northern Luzon was the most remote point in the Southwest Pacific Area islands; on the other hand, Luzon contained cities, ports, and enemy headquarters. Medical materiel seems to have been sparse and obtained in great part from local sources, including the Japanese Army. As Volckmann wrote, "Once when in desperate need of medical supplies and instruments we found it necessary to raid two Jap installations, which were successfully moved lock, stock and barrel, minus the Japs, out into the mountains." Prior to the Lingayen landing, supplies were seized, purchased (apparently by giving IOUs, which the American government later honored), or obtained through donations. Medicines came by submarine only twice, on 18 December 1944 and on 10 January 1945.[19]

To Volckmann and Blackburn, the value of medical support for the guerrillas was many sided. During the buildup phases it was essential to personal survival. Both men suffered severely from diseases and infections, and depended on any treatment available so that they could continue to do their jobs, lead their forces, and fight on. The medical establishment they created out of such slight materials aided them in sustaining morale and also in winning popular support. In camp the discipline of preventive medicine (as they had learned early) was an important aspect of not only maintaining health but also reestablishing a sense of self-worth among defeated troops. Such medicine was a long way from the science of great Army hospitals, but it met the elemental needs of the guerrillas in a hard and hostile world.

Once American units had landed at Lingayen, Volckmann's guerrillas became semi-regular forces, enjoying many of the advantages and facing many of the problems of the Sixth and Eighth Armies. They operated in mountainous terrain against General Yamashita's tenacious defense; in May and June 1945 they fought well as regulars while attacking Japanese positions at Bessang Pass. Large numbers of severely wounded casualties tested the guerrilla medics to the full. Surgical instruments were still few and laboratory facilities poor. For this reason, difficult cases and those needing to be X-rayed were sent back to U.S. Army station hospitals. But litter-bearers attached to the battalion aid stations carried out the wounded on Army stretchers, instead of the "bamboo beds or hammocks" that had served in earlier fights. Access to regular sources of supply meant other advantages. Requisitions by the chief surgeon brought airdrops at first and then regular resupply via landing craft operating

[18]Harkins, *Blackburn's Headhunters*, pp. 271–72.

[19]Volckmann, *We Remained*, pp. 128 (quotation), 136; GHQ, FEC, "Guerrilla Resistance Movement," pp. 44–45, CMH–L; USAFIP-NL, "After-Battle Report," p. 204, file Geog S—Luzon 370.2, CMH.

along the coast. Apparently, Volckmann established a division clearing station, elaborating the original simple chain of evacuation, and his hospitals expanded to treat the influx of wounded.[20]

Expansion was essential, and personnel and supplies were now available. In February Volckmann had established a large base hospital, which gradually expanded from 150 to 800 beds to accommodate both medical and surgical cases. When rains flooded the camp site, the hospital moved into large buildings at Tagudin and obtained its food from a supply depot nearby. Surrounded by tented wards, it attained a 2,000-bed capacity by the beginning of June. By now the facility was in all but name a general hospital and a large one, though by no means up to U.S. Army standards in equipment or specialists.

Without large increments of civilian volunteers—doctors, nurses, pharmacists, and attendants—such units could not have functioned at all. Even so, the personnel "were practically on 24 hours duty." Volckmann rewarded their service with commissions, including the volunteer nurses who entered the Army Nurse Corps, Philippine Army. As the Japanese retreated and the front contracted, smaller hospitals were merged one by one into the base hospital. In July 1945 surgical cases had begun to decline in number, though apparently the procedures performed increased in complexity, suggesting a more varied professional staff. By now patients were wearing pajamas and sleeping on sheets under mosquito nets—a condition approaching luxury for these hard-bitten one-time irregulars.[21]

Medical cases continued to climb until September, with an overall record that echoed the experience of the Sixth Army in fighting hard campaigns in the Philippine disease environment. As had been the case with American forces early in the war, commanders proved lax about enforcing malaria discipline, which had to be made a command function; a court-martial was ordered for any officer or enlisted man, sick of malaria, who was found to have been lax about taking Atabrine. The effect, according to one of Volckmann's surgeons, was to reduce "malaria morbidity among our troops to 60%." Even for a guerrilla army, well acclimated and overwhelmingly Filipino in makeup and leadership, and equipped with American Army supplies and medical backup, this old enemy remained unconquered as fighting ended in August 1945.[22]

Overall, the guerrilla experience suggested the critical importance of very simple things in maintaining the health of irregular forces. Evans emphasized that the guerrilla doctor ought to be young, tough, and adaptable; a general practitioner rather than a specialist, with experience in surgery; and, above all, flexible in mind, gifted with patience, and able to absorb and survive defeat. The guerrilla band needed a few men with diverse and basic skills, a short list of crucial supplies and equipment that could be brought in over tenuous supply lines, a good working relationship between surgeon and commander, and—in medi-

[20]USAFIP-NL, "After-Battle Report," p. 207, file Geog S—Luzon 370.2, CMH.

[21]Ibid., pp. 197 (quotation), 207, file Geog S—Luzon 370.2, CMH.

[22]Ibid., p. 204, file Geog S—Luzon 370.2, CMH.

cine as in all things—the support of the civil population.

Medical aid given by the guerrillas to the people among whom they lived meant much to this relationship. Yet there can be no question that medical aid flowed primarily from the populace to the guerrillas, rather than the other way around. For medical care as for food, information, and recruits, the guerrillas depended on the people. And the people sustained them—out of fear, out of loyalty to the prewar government, or out of hatred of the Japanese.[23]

Prisoners of War

Armed and free to move about (but within sharp limits so as not to be detected by the Japanese), the guerrillas maintained their fighting spirit in part by their intimate knowledge of what happened to those who surrendered. The Japanese probably did not write the worst record of World War II in dealing with prisoners of war; comparative death rates suggest that that distinction was earned, either by the Germans for their treatment of prisoners taken on the Eastern Front or by the Russians for their treatment of the Germans. Yet the Japanese Army was guilty of mistreatment that ranged from neglect to torture, that brought death to many prisoners, and that later caused some officers to be tried and executed as war criminals.

For medical personnel who fell captive at Bataan and elsewhere, imprisonment meant not only sharing the miseries of their comrades but also attempting, usually against great odds, to save the lives of officers, enlisted personnel, captive civilians, and sometimes their Japanese guards in camps that dotted the Philippines, Formosa, Manchuria, Korea, and Japan.[24]

The practices and cultural assumptions of the Japanese military differed sharply from those of the Western powers. Japanese soldiers were routinely brutalized during training, and the least resistance to orders was savagely punished. Combatants were, and expected to be, treated as expendable. Surrender was a court-martial offense, a shameful act that cut the prisoner off from his people and kindred. Treatment facilities for casualties were often grossly inadequate, for reasons that may have been primarily logistical. Precautionary measures—for example, safety devices installed in American warplanes—were regarded, with contempt, as unworthy and cowardly. Such

[23]Interv, Evans, 29 Jun 56, file 000.71, HUMEDS, RG 112, NARA.

[24]Howard S. Levie, *Prisoners of War in International Armed Conflict*, International Law Studies, vol. 59 (Newport, R.I.: U.S. Naval War College Press, 1978), p. 5; Bernard M. Cohen and Maurice Z. Cooper, *A Follow-Up Study of World War II Prisoners of War*, VA Medical Monograph (Washington, D.C.: Department of Medicine and Surgery, Veterans Administration, 1954), pp. 15–24; U.S. Department of Health, Education, and Welfare, *Message From the President of the United States Transmitting the Report of the Secretary of Health, Education, and Welfare, Entitled Effects of Malnutrition and Other Hardships on the Mortality and Morbidity of Former United States Prisoners of War and Civilian Internees of World War II: An Appraisal of Current Information*, 84th Cong., 2d Sess., 12 January 1956, H. Doc. 296, p. 33; Wibb E. Cooper, "Medical Department Activities in the Philippines From 1941 to 6 May 1942, and Including Medical Activities in Japanese Prisoner of War Camps," pp. 144–49, file 314.7, HUMEDS, RG 112, NARA. The legal situation with respect to Japan, which had signed and ratified the Hague Convention of 1907 and signed but not ratified the Geneva Convention of 1929, is discussed in "International Military Tribunal for the Far East: The United States of America and Others versus Araki Sadao and Others," 4:1121, CMH–L.



AMERICAN PRISONERS UNDER JAPANESE GUARD SORTING EQUIPMENT

attitudes regarding caste, honor, expendability, shame, and death were premodern in origin, but formed a mindset much cultivated by Japanese officers during the 1920s and 1930s.[25]

The consequences of Japanese military ideology appeared early in the fighting. The fall of the Philippines in April 1942 delivered tens of thousands of Americans and Filipinos into the hands of the Japanese. On Bataan most captives were already in poor condition from starvation and malaria when they began a march of about 100 miles, some in trucks but many on foot, toward prison camps north of Manila. No medicines were available, except those the prisoners carried themselves and the little distributed by American medical personnel at makeshift aid stations along the way. Dysentery and exhaustion were second to hunger, for no provision had been made for water or food. Some Filipino civilians courageously gave

[25]Edward J. Drea, "In the Army Barracks of Imperial Japan," *Armed Forces and Society* 15 (Spring 89): 329–48; "International Military Tribunal for the Far East," 4:1142–44, CMH–L, in which the defense attorney cites the views of anthropologist Ruth Benedict. In his article "Japanese Treatment of Prisoners in 1904–1905—Foreign Officers' Reports," *Military Affairs* 39 (Oct 75): 115–17, Philip A. Towle presents evidence that Japanese behavior toward prisoners of war in World War II reversed an earlier record of humane treatment during the Russo-Japanese War.

small handouts to the weary marchers, but supplies were hopelessly inadequate to the need. No sanitary facilities existed in rest camps, and the living were often denied opportunity to bury the dead.

Brutality by the guards was erratic. Some prisoners who fell out, unable to continue, were bayoneted and left by the roadside; some were buried alive. Human feeling perished; prisoners buried dead and living comrades at bayonet point or abandoned fallen friends in the road. At San Fernando the survivors received a bowl of rice each and some water, before being jammed into boxcars for a 25-mile journey into the Tarlac Province. At the end of the journey they walked another 3.5 miles to Camp O'Donnell. About 650 Americans and 5,000 to 10,000 Filipinos had perished on the march.[26]

Meanwhile, at the end of May the Japanese partially evacuated the hospitals on Bataan, sending General Hospital No. 2 to Cabanatuan. Patients and hospital staff were provided trucks to ride in, along roads still lined with decomposing bodies from the march. (Hospital patients were among the dead, for some Filipinos, hearing a rumor that they were to be allowed to return home, had left while still sick to join the Death March.) Though Hospital No. 2 was obliged to go empty-handed, General Hospital No. 1, favored on account of its well-run ward for Japanese prisoners, retained its own equipment and supplies plus medicines that had been moved to its stores from No. 2. The combination of enemy generosity and American cleverness ultimately benefited prisoners at Camp O'Donnell, where Hospital No. 1 was sent by stages in late June and early July. By the time it arrived there it was very badly needed.[27]

O'Donnell was a half-completed training camp for Philippine Army recruits. Its bamboo and nipa structures had unfinished roofs and unconnected water pipes. No utilities had been installed, and the septic system was only partially complete. Situated in the barren piedmont of the Zambales Mountains, the camp was surrounded by a heavy growth of mosquito-infested cogon grass. Here the 9,000 American and 45,000 Filipino survivors of the Death March endured days of burning sun without adequate food, water, or medicine.

Dysentery was almost unavoidable, for the prisoners lacked tools to dig latrines, oil to kill the maggots that swarmed there, soap and water to clean themselves or their huts, fuel to boil contaminated water, and drugs to treat illness when it appeared. In consequence,

> the camp became one vast sewer, foul and stinking. Clouds of flies buzzed everywhere: in the latrines, where they dropped their eggs in teeming filth; on the faces of those

[26]W. H. Waterous, "Reminiscences of Dr. W. H. Waterous Pertinent to World War II in the Philippines," pp. 56–57, file 314.7–2; Cooper, "Medical Department Activities," pp. 100–06, file 314.7. Both in HUMEDS, RG 112, NARA. See also Stanley L. Falk, *Bataan: The March of Death* (New York: W. W. Norton and Co., 1962), pp. 197–98.

[27]Waterous, "Reminiscences," pp. 59–62, file 314.7–2; James W. Duckworth, "The Official History of General Hospital Number One, United States Army Forces in the Far East, at Camp Limay, Bataan, Little Baguio, Bataan, and Camp O'Donnell, Tarlac, Philippine Islands, From December 23, 1941 to June 30, 1943," pp. 4–5, file 319.1–2 (General Hospital 1) Philippine Islands; James O. Gillespie, "History of General Hospital Number 2," pp. 23–32, file 314.7–2; idem, "Recollections of the Pacific War and Japanese Prisoner of War Camps, 1941–1945," pp. 25–32, file 314.7–2; Interv, Col James W. Duckworth, 4 Jun 45, file 000.71. All in HUMEDS, RG 112, NARA. See also Alfred A. Weinstein, *Barbed-Wire Surgeon* (New York: Macmillan Co., 1948), pp. 48–67.



PRISONERS ON THE DEATH MARCH

in coma, rimming their lips and drinking from their half-open eyes; over open, dripping ulcers of arm and leg; in filth-soaked clothing. They settled in an almost solid, quivering mass on the rice buckets as they were loaded by shovel from the steaming kawalis [open kettles], refusing to rise as they were waved away by K.P.'s.

Eating became a tricky maneuver; one hand rapidly shoveled rice from mess kit into mouth while the other moved back and forth over a rag with which the rice in the mess kit was kept covered.

Requests to the Japanese guards for food, medicine, and tools were turned away. Deaths from amebic and bacillary dysentery, malaria, and beriberi mounted accordingly. From 15 April to 10 July about 22,000 Filipinos and 1,500 Americans died—548 on a single day, 27 May.[28]

In early July most of the surviving Americans were transferred to the camp at Cabanatuan, where their arrival made an unforgettable impression on the relatively strong and well-off captives from

[28]Quotation from Weinstein, *Barbed-Wire Surgeon*, p. 72. Statistics from Duckworth, "History of General Hospital Number One," p. 5, file 319.1–2 (General Hospital 1) Philippine Islands, and from Gillespie, "Recollections," pp. 44–45, file 314.7–2, HUMEDS, RG 112, NARA. Beriberi is caused by vitamin B–1 (thiamin) deficiency and has two forms, wet and dry.

Corregidor. With tears in his eyes, the camp's medical director watched all that remained of the battling bastards of Bataan:

> Inching their way along the road came a ragged formation of dirty, unkempt, unshaven, half-naked forms, pale, bloated, lifeless. They staggered and stumbled, some plodded, others uncertain of their balance and strength lay down. . . . Limbs grotesquely swollen to double their normal size. Faces devoid of expression, form or life. Aged incredibly beyond their years. Barefeet [sic] on the stony road. Remnants of gunny sacks as loin cloths. Some stark naked. Bloodshot eyes and cracked lips. Smeared with excreta from their bowels. Thus they came . . . to the end of the road, the strong, young and alert men of the 31st U.S. Infantry, the Air Corps, Artillery and supporting services.[29]

Back at O'Donnell, General Hospital No. 1 confronted the shambles that remained. Captives, mostly Filipinos, were dying at the rate of 300–500 a day, many in St. Peter's Ward, a makeshift hospital for terminal dysentery cases, where 500 patients lay on the dirt floor. The 156 Americans at the camp also were gravely ill. Every prisoner was suffering from some form of deficiency disease. Since the Japanese had sent Col. James W. Duckworth, MC, the commander of No. 1, to Manila to be treated for appendicitis, the initial work fell to Col. John J. Schock, DC, a dental officer, who commanded in his absence. Still in possession of medicines, surgical instruments, mattresses, and even refrigerators brought from Bataan, he and his subordinates were able to set up a recognizable medical center. Returning on 19 July with a welcome reinforcement of officers and enlisted medics from Corregidor, Duckworth found the camp transformed. The old latrines had been covered, and the new ones were burned out daily and sprinkled with lime. The stagnant pools of water had been drained and the cogon grass cut and burned, and all water for drinking was boiled or chlorinated. The camp was being policed daily.

Duckworth continued and amplified Schock's work in his own way. He divided his unit into five subsections that provided specialized treatment. In this way the medics could handle the greatest possible number of patients and isolate as many sick as possible from contact with those who were still well. He cajoled small quantities of quinine and diphtheria antitoxin from the Japanese, extracted more from the "grapevine," as he called the camp black market, and received still more from a married couple, Romeo and Fe Atienza, the Philippine Red Cross representatives who risked and suffered beatings for bringing medicines into the camp.[30]

Duckworth also persuaded the Japanese to provide more protein and vitamins for the prisoners' diet. The daily ration of rice, watery weed soup, and an occasional strip of carabao meat was supplemented by small weekly additions of fresh fruit, oleomargarine, coconut oil, sugar, lard, and flour. A tiny meat ration became standard—about 5 ounces per man per day—and the sick received some eggs and canned milk. The medics pitched in to build the facilities the camp desperately needed. They constructed crude showers, strung elec-

[29]Gillespie, "Recollections," p. 50. file 314.7–2, HUMEDS, RG 112, NARA.

[30]Quoted word from Interv, Duckworth, 4 Jun 45, p. 15, file 000.71, HUMEDS, RG 112, NARA. See also Julien M. Goodman, *M.D.P.O.W.* (New York: Exposition Press, 1972), p. 49.



AMERICAN PRISONERS AT CAMP O'DONNELL

tric wires, laid water and sewer pipe, dug drainage ditches, and hammered together boardwalks over the contaminated soil.

Duckworth was remarkably successful in his relations with the Japanese. He obeyed their orders and maintained firm discipline among his medical personnel. Finding that the Japanese lacked a dental corps, he had his own dentists work on them. American doctors provided medical treatments as well, for Duckworth judged Japanese Army doctors to be "very low grade" in the main (a view commonly held by American medical officers), though he made an exception for the Japanese medical officer at O'Donnell, a Dr. Yasamira. No doubt medical attention was part of Duckworth's secret for obtaining supplies from the Japanese. But he succeeded also by his presence—his massive physical build; his soldierly manner; and his cool dignity that impressed "even . . . the Japanese who confronted him."[31]

Meanwhile, Camp O'Donnell approached the end of its unhappy history. The Japanese adopted a policy of indoctrinating the Filipinos in the glories of the Great East Asia Co-Prosperity

[31]First quotation from Interv, Duckworth, 4 Jun 45, p. 9, file 000.71, HUMEDS, RG 112, NARA; second quotation from Goodman, *M.D.P.O.W.*, p. 47. See also Duckworth, "History of General Hospital Number One," p. 5, file 319.1–2 (General Hospital 1) Philippine Islands, HUMEDS, RG 112, NARA.

Sphere, and began to send them to their homes. With diminishing numbers, improving food, basic sanitation, and simple medical treatment, the death rate among those who remained plummeted from about 550 a day to 500 a month and then to 5 a month. During the last two months at O'Donnell no one at all died. In January 1943 the Japanese closed the camp down and sent the majority of the Americans to Cabanatuan, minus most of their medical equipment and supplies. Duckworth went to Old Bilibid, where most high-ranking officers were interned, depriving the main American prison camp of a skilled hand and a source of leadership and inspiration.[32]

Cabanatuan

Sixty-five miles north of Manila in the Central Plains of Luzon, the town of Cabanatuan was the site of an abandoned Philippine Army camp. By mid-1942 about 9,000 prisoners lived there, laboring in the camp itself, on an adjacent farm, and on a nearby airfield. Across the road from the main camp, General Hospital No. 2 was just establishing itself in barracks of bamboo and nipa when the main transfer of Americans from O'Donnell occurred. The hospital census rose from 420 on 8 June to 2,512 on 20 July. With so many patients, many already moribund, and with almost no supplies, conditions at Cabanatuan became worse during the same period that those at O'Donnell became better. Every day naked bodies were dragged or carried to shallow graves. Not until 15 December was a medical officer at Hospital No. 2 able to record: "1st day since organization of this hospital—no deaths."[33]

Col. James O. Gillespie, MC, the commander of Hospital No. 2 on Bataan, had continued in that position until July, when an American camp command was established. He then became the medical director of the entire camp, and Lt. Col. William R. Craig, MC, succeeded him at the hospital. In September Gillespie was sent to Formosa, the fate of many ranking officers. Craig took his place as medical director, and Lt. Col. Jack W. Schwartz, MC, a urologist who had turned himself into an able general surgeon on Bataan, took over the hospital.

In turn, each attempted to reach as many prisoners as possible with the inadequate means available to him. A camp of the sick surrounded the hospital, divided into wards for the acutely ill and a convalescent area, while dispensaries served the working prisoners. The hospital offered primarily nursing care; the Japanese provided no medicines until late July, and not much thereafter. Some contacts had developed with Filipinos outside the camp, and a trickle of medical supplies began to be smuggled in. Nevertheless, in a twenty-day period of June 498 died and 789 more in July. The causes were malaria, diphtheria, dysentery, and the diseases of malnutrition. The camp cemetery now held 1,287 Americans, and would contain more than 2,400 before

[32]Interv, Duckworth, 4 Jun 45, file 000.71; Cooper, "Medical Department Activities," pp. 106–09, file 314.7; Duckworth, "History of General Hospital Number One," pp. 5–6, file 319.1–2 (General Hospital 1) Philippine Islands. All in HUMEDS, RG 112, NARA. See also Weinstein, *Barbed-Wire Surgeon*, pp. 71–103; Kary C. Emerson, *Guest of the Emperor* (Privately published, 1977), pp. 23–24, copy in CMH–L.

[33]Statistics and quotation from Maj Edward R. Wernitznig, MC, Diary, 8 Jun, 20 Jul, and 15 Dec 42, Historians files, HUMEDS, RG 112, NARA. See also Emerson, *Guest of the Emperor*, pp. 28–29, copy in CMH–L.

evacuation and improved food supplies ended the wave of deaths.[34]

Conditions at Cabanatuan in the early days were not much better than the worst at O'Donnell, and for the same causes. The diet was grossly inadequate; malaria and diphtheria went unchecked for several months because of a lack of quinine and antitoxin. No insect screens were available, pit latrines overflowed, water was scarce (three taps for 9,000 men), and soap not to be found. Flies multiplied and dysentery spread, creating scenes that were becoming all too familiar wherever Japanese prisons stood. As Colonel Gillespie wrote, "One might see the malnourished remnant of a formerly strong young man eating his rice while sitting beside a companion either dead or dying and apparently indifferent to the filth, flies, foul odors and the utter horror of the situation." In the hospital, attendants could not keep their patients clean, for almost nothing was available except cogon-grass brooms to sweep the wards. A hut numbered 0 was set aside for moribund dysentery cases, and, like the St. Peter's Ward at O'Donnell, assignment to the Zero Ward was tantamount to a sentence of death for all but a few, the ward physician recalling that "no tile floor in a slaughterhouse ever looked redder than that ward with bloody liquid stools all over the place."[35]

Had such conditions continued, few prisoners would have survived the war. But improvements began to be noted toward the end of July. On the twenty-sixth the Japanese for the first time issued quinine, diphtheria antitoxin (an epidemic had broken out that claimed 125 lives), and a few other medicines. Two Filipina Red Cross nurses smuggled large quantities of antitoxin into the camp with the aid of a Japanese camp doctor, who was enamored of one of them. The prisoners responded with an active cleanup campaign, Army engineers leading the work of constructing septic tanks, digging wells and drainage ditches, and building new latrines.

But crowding—80 to 100 men occupied barracks intended for 40—and lack of medicines to treat dysentery were continuing sources of illness and death, as was a diet that averaged 600–800 calories a day, with almost no protein. The food supply reached its nadir in October, when a doctor noted that "patients have been eating cats, dogs, rats, frogs, and earthworms." Improvement came in November, when the Japanese brought carabao for slaughter into the camp. Quantities of meat were added to the whistleweed soup, and some vegetables were provided from the camp farm. Work details received bread, and the sick were given canned milk. But anything that was remotely edible continued to be consumed. Stray dogs, entering to scavenge at the slaughterhouse, were trapped in pits; frogs that invaded the camp in pursuit of maggots wound up, with their prey, in prisoners' bellies, after being cooked on a doctor's alcohol stove.[36]

[34]Gillespie, "Recollections," pp. 40–41 (statistics), file 314.7–2; Maj Clinton S. Maupin, MC, Diary, 30 Sep 42, Historians files. Both in HUMEDS, RG 112, NARA.

[35]Gillespie, "Recollections," pp. 40–41 (first quotation, p. 40), file 314.7–2; Waterous, "Reminiscences," pp. 68–70 (second quotation, p. 69), file 314.7–2; Cooper, "Medical Department Activities," p. 116, file 314.7. All in HUMEDS, RG 112, NARA. Microscopic examination showed that some of the patients had cholera.

[36]Maupin Diary, 31 Oct 42, Historians files, HUMEDS, RG 112, NARA. Whistleweed is an aquatic vine found in irrigation ditches and ponds. It resembles the sweet potato vine, but its stems are tough and woody.

But better days were at hand. The Japanese at last formally recognized their captives as prisoners of war. Though Japan was not a signatory to the Geneva accords that set international standards for the treatment of prisoners of war, the officers and some enlisted men were paid small sums that enabled them to purchase canned goods and fruit from Filipino vendors, who now were permitted in the camp. The Japanese allowed sports equipment and musical instruments into the camps for recreation, and at Christmas 1942 issued Red Cross supplies of medicines and food—corned beef, meat and vegetable stew, and sugar. Startling improvements were noted in beriberi and pellagra patients. The prisoners began to regain lost weight, and the death rate fell from about 300 to 3 or 4 a month.[37]

The period of stabilization that now set in was to be repeated many times in the prisoner-of-war experience. In a new camp, guards were brutal and food sparse; prisoners died in great numbers, and life for a time was almost insupportable. Then more food would become available, lax or friendly guards would be identified, and a variety of petty arrangements—rackets might be a better word—would be worked out among the prisoners, their guards, and the people outside the camp. In spite of shakedowns, prisoners saved personal articles, sold them to guards, and used the money to buy food. Sympathizers outside the wire even smuggled Japanese occupation notes—Mickey Mouse money, as the prisoners inevitably called it—into the camps.

The emergence of a barter economy brought some unpleasant characters to the fore. Gillespie remarked that "men generally degenerated [in the camps, and the] finer qualities of honor, fortitude, honesty and fair play disappeared. Some stole, others secured additional food through fraud and cheating." Inebriates got hold of the alcohol used as fuel in Japanese trucks and "created disturbances." Entrepreneurs became "'big time' operators and, in connivance with Japanese guards, established 'black markets' in food, tobacco, medicines, and other commodities. They profited immensely at the expense of their fellow victims." He added that "some of the officers were little or no better than the worst of the men." (One memoirist added that a few medical personnel were among the offenders, selling sulfa or quinine tablets originally taken from Army stores for food or other benefits.) However, the perception of the traffickers as racketeers should not obscure their importance in bringing essential goods into the camps, by whatever means.[38]

Prisoners usually worked, earning small sums, and stole as much as they could. Sometimes a particular item (sugar, for example, among prisoners whose job was loading the commodity) became a sort of money for a camp, serving as a medium of exchange in many transactions. Guards were bribed, and food was purchased from civilians. No prisoners were prosperous by the stan-

[37]Waterous, "Reminiscences," pp. 69, 79, file 314.7–2; Cooper, "Medical Department Activities," p. 120, file 314.7; Gillespie, "Recollections," p. 39, file 314.7–2. All in HUMEDS, RG 112, NARA. See also Merle M. Musselman, "Nutritional Diseases in Cabanatuan," *War Medicine* 8 (Dec 45): 325–32; Goodman, *M.D.P.O.W.*, pp. 73–74.

[38]Quotations from Gillespie, "Recollections," p. 48, file 314.7–2, HUMEDS, RG 112, NARA. See also Hawkins, *Never Say Die*, p. 75.

dards of free men. But a few became kings of the hobo jungle they lived in, and most became stronger and regained hope of ultimate liberation.

Prisoners' sexual habits reflected the changes in their condition. When they were hungriest, the drive entirely disappeared. As their condition improved, it revived, manifested in nocturnal emissions and masturbation and, for those who were fortunate, in brief liaisons with local women or prostitutes during work details outside the wire. Homosexuality also appeared, both in the form of prostitution by a few, who bartered their services for food, and in more stable relationships as well. "Homosexuality was present in all nationality groups," reported one medical officer. "This reached a point that . . . [one doctor] conducted a weekly marital relations clinic, in an effort to keep the couples happy in our tight society."[39]

A second pattern, supporting the first, depended on the prisoners' physical adaptation to short rations and the stress of prison life. Many successfully reverted to a primitive level of existence, and "once that state was achieved, a condition of relative balance resulted, morbidity stabilized, and mortality rates fell, at least until some severe new stress" occurred. Lt. Col. Willard H. Waterous, MC, an eye, ear, nose, and throat specialist captured on Bataan, regretted that systematic clinical studies of the phenomenon were impossible under camp conditions. He observed, however, that the body could acquire the ability to use whatever vitamins were available in the poor rice diet. "In the early days [at Cabanatuan]," he wrote, "hundreds of cases of corneal ulcers were seen; in the later months [of 1942] practically none were to be seen," emphasizing that the change occurred before additional food and Red Cross packages became available. "In my opinion this all goes to show the enormous flexibility and adaptability of the human mechanism under conditions of duress."[40]

Other signs of toughness and flexibility also were noted. Strangely enough, given the situation in which they lived, few prisoners became psychotic. Though irritability and backbiting were common, psychoneurosis also was rare. Perhaps those who were susceptible to depression died early; perhaps others did not behave irrationally because such symptoms evoked no sympathy and offered no escape from hunger and beatings. The chief exceptions to the rule were mental disturbances resulting from the diseases of malnutrition or cerebral malaria. The psychotics who did appear were removed to locked wards at Old Bilibid.[41]

The matured medical service at the camp provided a variety of services, though necessarily in rudimentary form, given the circumstances. The medical director established overall medical and

[39]Quotations from Knox, *Death March*, p. 419. Most prisoner narratives are reticent about sexual matters; see, however, Weinstein, *Barbed-Wire Surgeon*, pp. 160–61, 236; J. E. Nardini, "Survival Factors in American Prisoners of War of the Japanese," *American Journal of Psychiatry* 109 (Oct 52): 241–48.

[40]First quotation from Charles G. Roland, "Stripping Away the Veneer: P.O.W. Survival in the Far East as an Index of Cultural Atavism," *Journal of Military History* 53 (Jan 89): 79; remaining quotations from Waterous, "Reminiscences," p. 102, file 314.7–2, HUMEDS, RG 112, NARA.

[41]The observations of Army doctors in this respect were confirmed at the end of the war by Army and Navy physicians examining newly freed Allied prisoners. See Department of the Navy, "The United States Navy Medical Department at War, 1941–1945," 1:656, files of Bureau of Medicine and Surgery Archives (BMSA), Washington, D.C. See also Chapter XIII of this volume.

sanitary policy, while the hospital commander saw to the acutely ill and convalescent. Usually 50–60 officers—doctors, dentists, veterinarians, and MACs—were assigned to the hospital, and about half that number to the dispensary service, organized to meet the outpatient needs of the workers. Despite continuing shortages of all essentials, the medics operated dental clinics, provided sanitary inspection services, established a rudimentary medical supply system, and supervised the slaughtering of animals for food. At the hospital, surgery was performed and an eye, ear, nose, and throat clinic treated corneal ulcers and loss of vision resulting from avitaminosis.

The medics could not perform miracles, however, and miracles were needed at Cabanatuan. In part, the insoluble problems were the work of the Japanese prison doctor, a particularly heartless or obtuse individual later convicted as a war criminal. But major difficulties resulted from the course of the war and the consequent failure of the enemy's logistical system. Without warning, the Japanese began to reduce the diet in the second half of 1943, until the prisoners were subsisting on about 1,000 calories a day. The diseases of malnutrition promptly reappeared; soon three-quarters of the prisoners showed some symptoms of beriberi, especially the so-called wet form, with edema of the eyelids, limbs, and abdomen. In December 1943 another shipment of Red Cross supplies was issued minus the medical supplies, which were sent to Old Bilibid and issued to Cabanatuan on monthly requisition. Improvement in the prisoners' health, however, was slight, because the regular ration continued to shrink. During 1944 each man received less than 300 grams of rice a day, and salted fish took the place of meat in the soup. Hospital reports certified by a Japanese Army surgeon indicated that more than 90 percent of eye problems were due to nutritional amblyopia—dimness of vision caused by avitaminosis.

Perhaps fortunately, the camp shrank as the ration did, for details were dispatched frequently, either to labor elsewhere in the Philippines or to be taken (each with its attendant medical officer and a small cache of Red Cross supplies) to Japan. By the time the majority of those remaining at Cabanatuan were evacuated to Japan in October 1944, weight loss since capture averaged 30 to 35 pounds per man. By then the best hope of the prisoners who remained alive were the mounting successes of the Allies, which promised an ultimate liberation. Most of those who could be killed by a radically deficient diet had already died.[42]

Bilibid and Santo Tomas

Manila's military prison Old Bilibid had once been condemned as unfit for use, but the stuccoed buildings within its 12-foot rock-and-plaster walls were home for longer or shorter periods to many Americans during the Japanese occupation. The prison housed a naval hospital; served as a staging area for prisoners in transit to other camps; and pro-

[42]Gillespie, "Recollections," pp. 32–84, file 314.7–2; Cooper, "Medical Department Activities," pp. 109–22, file 314.7; Waterous, "Reminiscences," pp. 64–76, file 314.7–2; Intervs, Duckworth, 4 Jun 45, and Lt Col Stephen C. Sitter, 12 Sep 45, file 000.71. All in HUMEDS, RG 112, NARA. See also Musselman, "Nutritional Diseases," p. 330; Emerson, *Guest of the Emperor*, pp. 28–35, copy in CMH–L; Lt. Col. Albert Fields Diary, 27 May 42–29 Jul 43, file 999.2–6, and Cabanatuan Hosp Med Rpts, 1943–44, file 583–1, box 165, Philippine Archives, RG 407, NARA.

vided transient quarters for the work details sent to labor in the capital, which were accompanied by medical detachments organized from the prison staff. Among its other functions, Old Bilibid was the center for medical service to prisoners of war throughout the Philippines. Red Cross medical supplies also were stored here. Despite various shortcomings—requisitions sometimes took months to fill, and permission to send patients to the naval hospital was hard to obtain—the centralized system benefited prisoners of war in many ways.

The Navy medics organized the hospital, as far as possible, like any other facility with departments, wards, and offices. Colonel Cooper, arriving with the contingent from Cabanatuan, judged its physical plant the best he had seen in any prison camp, and Colonel Gillespie spoke of the "incredible luxury" of living in a real building with electric lights, beds, and a bathroom. The wards occupied buildings of reinforced concrete; patients lay on Regular Army bunks; there was an abundant supply of running water; and latrines and showers were connected to the city water and sewer systems. Sanitary conditions were satisfactory, and outbuildings housed dental and outpatient clinics and stored medical supplies. Hospital records suggest a surprisingly well-supplied facility whose staff was able to perform surgery and to provide adequate treatment for prisoners, nearly all of whom were malarial and grossly malnourished.[43]

Here as at Cabanatuan, however, the ration shrank as Allied victories mounted after mid-1943. Gradually, meat, fat, and even rice all but disappeared. Comdr. Thomas H. Hayes, MC, USN, who took command of the hospital in October 1943, noted in his diary that his own meals consisted of old and woody radishes, a few spoonfuls of rice, and bitter soup. Many inmates survived only because they could still buy food from Filipino vendors. But even this resource disappeared when Manila itself developed an acute food shortage in the spring of 1944, at least in part because the interruption of gasoline supplies by Allied attacks on Japanese shipping immobilized motor transport.

Thus, hungry prisoners transferred from Cabanatuan arrived to find their ration with less protein than before. During their six-week stay at Old Bilibid, weight loss averaged another 15 to 17 pounds. Those who stayed at the prison lived for the remaining months of captivity on 300 grams of rice and 200 grams of corn per man per day, plus some greens, and only liberation by the Sixth Army prevented mass starvation. By this time the prison must have resembled a cross between a primitive village and a city slum. The ambulant went about in rags or loincloths, thin as reeds, burned mahogany by the sun.[44]

Allied civilians and American nurses were more fortunate than the military

[43]Quoted words from Gillespie, "Recollections," p. 51, file 314.7–2, HUMEDS, RG 112, NARA. See also Personal Health Records, Bilibid Hosp, boxes 152–54, Philippine Archives, RG 407, NARA.

[44]Cooper, "Medical Department Activities," pp. 122–25, file 314.7; Interv, Duckworth, 4 Jun 45, file 000.71. Both in HUMEDS, RG 112, NARA. See also PhM1c Robert W. Kentner, USN, Journal, 8 Dec 41–5 Feb 45, BMSA; Col Paul D. Bunker Diary, 3 Jan 42–1 Mar 43, file Geog S—Philippines 314.81, CMH; Comdr Thomas H. Hayes, MC, USN, Diary, file 999.2.224, Philippine Archives, RG 407, NARA. Hayes' diary has been published as A. B. Feuer, ed., *Bilibid Diary: The Secret Notebooks of Commander Thomas Hayes, POW, the Philippines, 1942–1945* (Hamden, Conn.: Archon Books, 1987).



OLD BILIBID HOSPITAL WARD AFTER LIBERATION

captives. Although the Japanese viewed surrender by men of the armed services as a disgraceful act, civilians and women were exempted from the demands of *bushido* ("the way of the warrior"). They were not, however, exempted from the arbitrariness and neglect that pervaded the Japanese treatment of captives, nor the casual brutality of guards, nor the collapse of the Japanese logistical system in 1944, with its harsh consequences for prisoners of all types.

Santo Tomas University was a Dominican institution that occupied a 60-acre campus in a densely populated area of the city. Large classroom buildings, meant to accommodate 6,000 students and a faculty of 300, were surrounded on three sides by a masonry wall and on the fourth by an ornate iron fence with gates. Here the Japanese established a prison for civilian internees. In January 1942 Santo Tomas held about 3,500, and a year later about 4,200, including by that time 82 female military personnel. About 70 percent of the prisoners were Americans; about a quarter, British; the rest, a mixture of many other Allied countries. All had been caught in the Philippines by the outbreak of war. Together they formed a small self-governing international city. An executive committee of four Americans and two Britons managed the internal workings of the place through a network of subordinate committees on everything from sanitation and health to entertainment. All but the

smallest children—about 700 lived at Santo Tomas—were expected to work at least two hours a day.[45]

Since they were not prisoners of war, the inmates had to pay for everything with money provided by the Red Cross or borrowed from well-to-do fellow inmates. Former executives of the Red Cross, Standard Oil, and General Electric underwrote many bills and obtained money from friends still free in Manila. Since vendors were allowed in to sell their goods, relative prosperity was the rule in the early days; a central kitchen served two meals a day, with lunch as well for the children, the old, and the sick, who received some milk, some meat, and an egg a day. Lt. Ruby F. Motley, a dietician who ran the children's kitchen, later declared that all were "very healthy" and had gained weight in the prison. Treatment for the sick was provided by Dr. Charles Leach of the Rockefeller Foundation, by several medical missionaries, a Manila physician, and eleven Navy nurses captured at Cavite. With a small hospital and several clinics, medical supplies purchased from Manila or given by the Red Cross, and the assistance of Filipino doctors and nurses who visited the prison, a basically healthy population had at least adequate care.[46]

Such was the situation at Santo Tomas when prisoners from Corregidor—fifty-seven Army nurses, three dieticians, and one physical therapist—arrived early in July 1942. When they were permitted to join the main body of prisoners and internees in August, they began to work with the Navy nurses on ward duty. Capt. Maude Davison, ANC, became chief nurse. In September ten more Army nurses arrived from Mindanao, where they had been captured when their plane went down on its way from Corregidor to Australia. With an ample staff of professionals at hand, the little hospital expanded. Preventive medicine was the responsibility of the sanitation and health committee; additional showers and toilets were installed, and vaccinations against cholera and typhoid were given by the Red Cross. Relenting on their earlier refusal to pay the captives, the Japanese provided each a stipend of 70 centavos (about 35 cents) a day. Since Manila warehouses were still stocked with food, the period from July 1942 to the end of 1943 passed in relative comfort and good health, given the fact that a prison was still a prison, that crowding was the rule, and that food intake was never entirely adequate for the adults, probably averaging about 1,700 calories a day. Though no epidemics hit the adults, enteritis and skin infections were common. During a memorable period in late 1943 almost every child in the prison came down with—and recovered from—measles and whooping cough.[47]

Then the situation darkened. Food became harder to obtain, and in

[45]A. V. H. Hartendorp, *The Santo Tomas Story* (New York: McGraw-Hill Co., 1964), pp. 7–29; Michele Manning, "Angels of Mercy and Life Amid Scenes of Conflict and Death: The Combat Experience and Imprisonment of American Military Nurses in the Philippines, 1941–1945," p. 45, file ANC 383.6 POW Nurses, Philippines, CMH.

[46]Hartendorp, *Santo Tomas*, pp. 14–18, 21–22; Intervs, Marie Adams, 7 Jun 45, and Ruby F. Motley, 26 Apr 45 (quoted words), file 000.71, HUMEDS, RG 112, NARA. Adams was field director of hospital service for the American Red Cross at the time of her capture.

[47]Josephine M. Nesbit, "History of the Army Nurse Corps in the Philippine Islands, September 1940–February 1945," pp. 38–41, file 314.7; Catherine L. Nau, "History of the War, Philippines, 1941–1945," p. 10, file 314.7; Intervs, Adams, 7 Jun 45, and Motley, 26 Apr 45, file 000.71. All in HUMEDS, RG 112, NARA.

February 1944 the Japanese military took direct control of the prison, imposing many restrictions. Gift parcels ceased to arrive, vendors were excluded, and outside medical assistance came to an end. Instead of providing funds to internees, the Japanese began to provide the food, which immediately declined both in quantity and quality. To make up for deficiencies in protein and vegetables, adults contributed a part of their ration to the children. Supplies soon ran so low that in November the special children's ration had to be stopped.

Inevitably, deficiency diseases had begun to appear. Prisoners lost as much weight between August 1944 and the liberation as during the previous two and a half years of confinement. By January 1945 the individual adult ration averaged only 680 calories a day, and total weight loss during confinement averaged 32 pounds for women and 51 pounds for men. On 5 January Canadian internee Anne Goldthorpe wrote in her diary: "I worried last night about a lump in my stomach. Then I found it was my backbone." Among the crowded inmates, hunger brought intense irritability; they wrangled about unimportant things. As recalled by a nurse, "We were ready to claw each other's eyes out over nothing at all." Depleted, their bodies either shrunken or bloated with beriberi, they lived in the increasing squalor of a prison where everything was breaking down and nothing was replaced or repaired.[48]

The last year of captivity was consumed by a struggle to survive until the Americans came. The work of the doctors and nurses, civilian and military, became ever more difficult as, hungry themselves, they dealt with an increasing patient load. As the internees' health declined, the hospital became overcrowded and additional wards had to be opened. Twenty-three at Santo Tomas starved to death in December 1944 and 32 in January 1945. In that month 475 were hospitalized. Liberation came in February, amid the flame and ruin of the battle for Manila. An inmate doctor, put into solitary because he had refused to falsify the death certificate of an internee who had starved, was set free. He performed eight major operations on American casualties of the battle for Manila, though "passing out cold twice because of his experiences with starvation and beriberi."[49]

Prisoners Outside the Philippines

Despite hunger, occasional labor drafts, and the torture and execution of a few prisoners who were accused of contacts with the guerrillas, civilians had a comparatively easy time of it. Military prisoners, on the other hand, were viewed by the Japanese in a variety of ways, none conducive to long life. They were seen as enemies, as warriors who had failed in their duty, as a disposable labor force to be exploited wherever needed, and as a potential danger if recaptured and returned to duty. Exhibiting them in their helplessness was also seen as a way to break down the prestige acquired by Westerners in the Orient during the generations of imperialism.

[48]First quotation as cited in Neil Henry, "A Journal of Human Endurance," *Washington Post*, 20 Mar 83. Second quotation from Interv, Adams, 7 Jun 45, p. 26, file 000.71, HUMEDS, RG 112, NARA. In loc. cit., see also Interv, Motley, 26 Apr 45.

[49]Interv, Adams, 7 Jun 45, p. 28, file 000.71, HUMEDS, RG 112, NARA.

Transferring prisoners to the center of the Empire to exploit them as labor began early in the war. Comparatively lucky were a number of high-ranking officers, including Colonel Gillespie, who were shipped out during 1942 when the seaways were safe. As the danger of an American invasion of the islands increased during 1944, many more were shipped from the Philippines to labor camps in Formosa, Korea, Manchuria, and Japan (*Map 14*). By that time American submarines and aircraft roamed the South China Sea, striking at Japanese shipping wherever found. The vessels carrying American prisoners were not marked, and many were sunk or damaged. Yet those who perished by friendly fire or by drowning were fortunate by comparison with those who died of thirst, heat prostration, or dysentery in the stinking holds.[50]

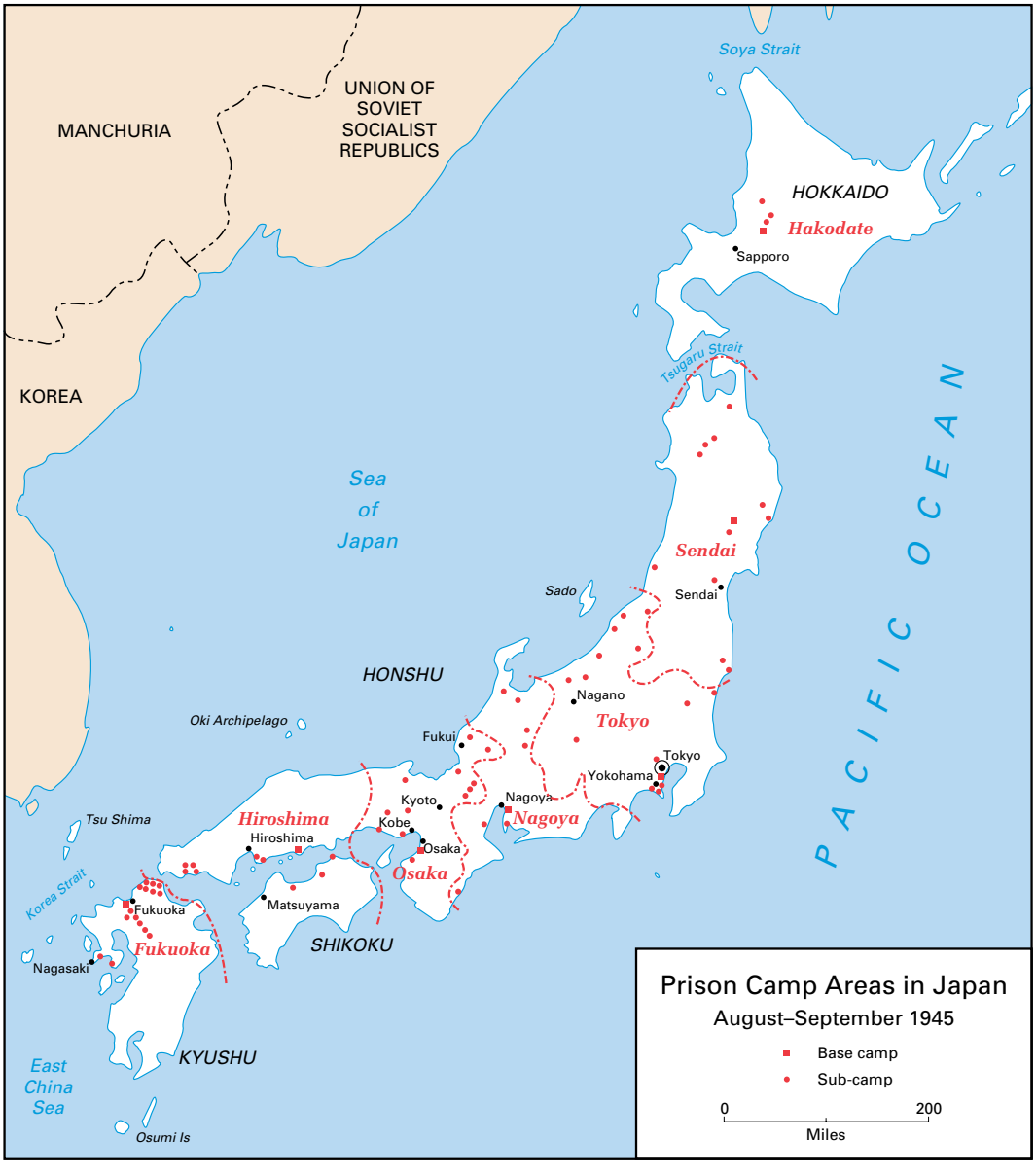
No voyage was more harrowing than that of the last group of American prisoners to leave the Philippines, 1,619 in all, who sailed from Manila on 14 December 1944 on the *Oryoku Maru*. They comprised most of the remaining senior officers in the islands, including medical and dental officers of the Army and Navy and a number of chaplains. Conditions were atrocious. Packed too densely into closed ovenlike holds and denied water, some died of suffocation while others raved and fought in the claustrophobic darkness.

Soon American planes began to bomb and strafe the *Oryoku Maru*. Almost as an answer to the prisoners' prayers, the ship was hit by a bomb off Subic Bay. After a miserable few days ashore, the surviving prisoners were transferred to the *Enoura Maru*, bound for Formosa. This ship in turn was sunk in the harbor of Takao, Formosa, by American planes. As a medic wrote, "Terrible sight to see, pile of dead bodies as result of bombing. No sleep. 'God watch over us.'" Three hundred and eleven dead prisoners were interred in a mass grave on a sandspit, while the remainder continued on a third ship, the *Brazil Maru*. Five hundred and eighty survivors arrived in bitter cold at the harbor of Moji, Japan, on 31 January 1945. Among the dead were about half the personnel of the Sternberg General Hospital and General Hospital No. 2. Some lines composed at Cabanatuan by Lt. Henry G. Lee, who died at Takao, may serve as the epitaph of the voyagers: "If I endure—I must go on enduring / And my reward for bearing pain—is pain."[51]

In their new prisons the survivors of such voyages encountered a mixed bag of Allied prisoners from all the battlegrounds of the Pacific. They met high-ranking officers who had been transported earlier from the Philippines, including General Wainwright; sailors and marines captured on Guam and Wake Islands;

[50]See the diary of a trip on the *Haro Maru* reproduced in Goodman, *M.D.P.O.W.*, pp. 114–26. However, there were some decent ships, as Goodman notes on p. 143.

[51]First quotation from Wernitznig Diary, 9 Jan 45, Historians files, HUMEDS, RG 112, NARA; second quotation from Henry G. Lee, *"Nothing But Praise"* (Culver City, Calif:: Murray and Gee, 1948), p. 33. See also Cooper, "Medical Department Activities," pp. 125–33, file 314.7, and Gillespie, "Recollections," pp. 73–85, file 314.7–2, HUMEDS, RG 112, NARA; Rpt, Lt Col Paul D. Phillips to Maj Gen William F. Sharp, CG, Visayan-Mindanao Force, 13 Oct 45, sub: Trip From Manila, P.I., to Moji, Japan, as Japanese P.O.W., December 13, 1944 to January 30, 1945, pp. 1–9, file Geog S—Philippines 314.82, CMH. Casualty figures for the voyage vary; many sources state that only 250–300 survived. Above statistics from *Oryoku Maru-Enoura Maru-Brazil Maru* file, box 148, Philippine Archives, RG 407, NARA.



MAP 14

American pilots fished from the sea; and British, Canadian, Dutch, and Australian fighting men taken in many battles of the Far East. Officers were usually compelled to work in the camps, though exceptions were sometimes made in extremely cold weather. In Formosa most prisoners were employed in farming; in Manchuria many worked in factories. In Japan the prisoners worked on farms, in mines, on

docks, and in munitions plants. In Korea they often performed coolie labor, pulling bullcarts to and from factories. Officers might grow vegetable gardens; one medical officer, ill with beriberi, was put to sewing uniforms and making buttonholes. Work in the mines was especially brutal, and everywhere the enlisted men bore the worst of it.[52]

Survivors of the *Oryoko Maru* were issued warm clothes on their arrival in Japan, but all prisoners were not so fortunate. Those taken from the tropics were often inadequately clad for the cold north Asian winters, and most were fed wretchedly. Living in drafty wooden buildings, heatless or warmed only by hibachis or (in Manchuria) by Russian coal stoves, they wrapped themselves cocoonlike in verminous blankets and slept on straw mats. Diet varied from place to place, but staples included rice and a watery soup made with bones or fish scraps and sometimes thickened with weevil-infested flour. Apparently, the food commonly supplied only 1,500–1,700 calories a day—entirely insufficient for those performing heavy labor. In some areas the food that was available from nearby farms was excluded from the camps. At Jinsen, Korea, where inmates had been starving, tons of potatoes were found rotting in a storehouse after the camp was liberated. But at Cheng Chia Tun, Manchuria, a very meager basic allowance was supplemented by the erratic arrival of Red Cross packages, and the prisoners, most of them senior officers excused from work on account of the intense cold, "got thru the winter in a relatively good fashion."[53]

By 1945 rations were at their lowest, though a few Red Cross packages still arrived. In some camps the guards themselves were either hungry or hoarding what food was available. Hunger dominated the prisoners' lives, and food haunted their dreams. They ate anything remotely edible. A sailor who had been captured on Guam recalled seeing prisoners consume "beetles, snakes, silkworms, rancid copra, [and] fodder stolen from horses' feed buckets." They killed and ate rats and cats; they stole chickens and, in the relative privacy of the latrine, tore the birds apart and gnawed the flesh from their bones. But there was never enough, and deficiency diseases spread as before, with their complex symptoms ranging from night blindness to burning feet to swollen limbs. Dysentery worsened the situation, spreading for the usual reasons—shallow open latrines; absence of oil, soap, and uncontaminated water; absence of adequate fuel to boil water for drinking; absence of medicines to treat illness when it appeared.[54]

[52]Cooper, "Medical Department Activities," pp. 134–42, file 314.7, and Gillespie, "Recollections," pp. 58, 81, file 314.7–2, HUMEDS, RG 112, NARA; Rpt, Phillips to Sharp, 13 Oct 45, p. 10, file Geog S—Philippines 314.82, CMH; Jan K. Herman, "Prison Diary," *U.S. Navy Medicine* 70 (Sep 79): 13–14 and 70 (Oct 79): 3, 5, 9; Weinstein, *Barbed-Wire Surgeon*, pp. 219, 234–35; Goodman, *M.D.P.O.W.*, pp. 138, 153, 184. Wainwright was confined for a time on Formosa (Taiwan), where Gillespie encountered him; then he was transferred to Manchuria.

[53]Gillespie, "Recollections," pp. 80–81 (quotation), file 314.7–2, HUMEDS, RG 112, NARA; Herman, "Prison Diary," Sep 79, p. 15; Goodman, *M.D.P.O.W.*, p. 131; E. Bartlett Kerr, *Surrender and Survival: The Experience of American POWs in the Pacific, 1941–1945* (New York: William Morrow and Co., 1985), pp. 166–67.

[54]Herman, "Prison Diary," Oct 79, p. 6 (quotation); Weinstein, *Barbed-Wire Surgeon*, pp. 190, 198–99, 234, 272–84; Kerr, *Surrender and Survival* p. 176; J. N. Crawford and J. A. G. Reid, "Nutritional Diseases Affecting Canadian Troops Held Prisoner of War by the Japanese," *Canadian Journal of Research* 25 (1947): 53–85. See also Peter Williams and David Wallace, *Unit 731: Japan's Secret Biological Warfare in World War II* (New

Continued

By the summer of 1945 even tenacious survivors were showing signs of weakening. Gillespie noted that a simple walk around the compound at Mukden, Manchuria, to which he had been relocated, brought on shortness of breath and muscular weakness. Insufficient protein caused a slackening of the abdominal wall muscles so that the inmates, despite their hunger, developed the bulge called "rice belly." Painful blisters appeared in their mouths with no clear cause. Psychological symptoms also reflected the stresses of long imprisonment, crowding, and inadequate diet. Some prisoners flew into ungovernable rages over small problems; senior officers were seen struggling furiously over small cheap cupboards, issued by the Japanese to hold personal belongings. A burning sensation in the scrotum reported by many prisoners led Gillespie to suspect the renewed onset of pellagra, caused by lack of niacin. Although the severe dementia that can result from the disease did not appear, episodes of bizarre behavior became common. A prisoner would report that one or more inmates were "off their rockers," and the next day they would report the same of him.[55]

The effort to function as medical professionals under such conditions continued to tax the devotion and ingenuity of captive doctors and corpsmen. Doctors were usually subordinate to the Japanese medical personnel and dependent upon them and the camp commander for facilities, supplies, and instruments. As a rule, the Americans were allowed a section of a building to hold sick call. At the Tanagawa camp near Osaka they worked in the hallway of the camp administration building, which also contained the Death House, a closetlike room with space for about eight patients, where the moribund were confined to die. In a room next to the Death House the Japanese medical staff made out death reports and issued medicines in meager amounts.[56]

Because many prison camps lacked facilities for surgery, the Japanese sometimes allowed serious cases to be taken to civilian hospitals for treatment. Thus, prisoner patients at Senryu went to the Mitsubishi mine hospital and the seriously ill at Umeda and Tanagawa into Osaka. The enlisted medical technicians who transported patients to the civilian hospitals noted violations of sterile technique even there, yet the risks had to be run for patients who would otherwise die. Partial exceptions to a generally bleak picture can be cited. At a camp whose inmates worked for the Mitsui Corporation Capt. Thomas H. Hewlett, MC, recalled that a large camp hospital was constructed and that "through the humaneness of Baron Mitsui, a 1919 Dartmouth graduate, we did have bed space for the sick and wounded," including two surgical wards. Here he worked on the bodies of those injured in the corporation's coal mines, using "dental novocaine as an anesthetic and sharpened table knives as scalpels."[57]

York: Free Press, 1989), pp. 51–62. The allegation has been made, though in our opinion not proved, that Western POWs were used as human guinea pigs by the Japanese germ warfare establishment in Manchuria. A brief account of Japanese germ warfare and other medical war crimes is given in Chapter XIII of this volume.

[55]Gillespie, "Recollections," pp. 87–88 (quoted words, p. 87), file 314.7–2, HUMEDS, RG 112, NARA.

[56]Kerr, *Surrender and Survival*, p. 177.

[57]Ibid., p. 183 (second quotation); Knox, *Death March*, p. 377 (first quotation).

In Hewlett's camp American doctors provided care, but in most camps Japanese military or civilian doctors were in charge. Some prisoners later recalled competent treatment from Japanese physicians. Many, however, had darker recollections. One American physician complained that the prison doctors he observed gave snap diagnoses, had no use for vitamins, and seemed to be ignorant of the germ theory of disease. Some, adherents of the traditional Chinese medicine that influenced much of East Asia, favored moxibustion and other folk remedies. Others apparently were worse than merely ill-informed. The prison hospital at the Shinagawa camp in Tokyo was the main facility for treatment of the thousands of prisoners in the capital area. The chief doctor, nicknamed the butcher or the spider, was accused of using prisoners as experimental animals to further his knowledge of surgery. In consequence, American medical officers gave false diagnoses to keep patients on the medical wards and performed operations themselves at night, kneeling on straw-covered floors. In the closed tuberculosis ward, however, other prisoners became subjects of bizarre experiments, which involved the injection of bile or soybean milk.[58]

American doctors had to scrounge or manufacture their own equipment, aided by their fellow prisoners. Those on work details bought medicine from civilians and smuggled it into camp, or raided Japanese storerooms at night. Scraps of metal became bone saws; steel guitar strings, a rib cutter; wood scraps, a fracture bed to hold a patient with a broken back, for whom there was not enough plaster to make a body cast. A doctor interested in laboratory work made himself a crude microscope of "bamboo tubing and field-glass lens[es]." One surgeon recalled a minor operation in which he used cocaine as an anesthetic and, lacking sutures, sealed off the wound with branding irons.[59]

Such expedients were necessary in large part because medical units had been stripped of their equipment upon capture, and because Red Cross medical supplies, intended for the prisoners, were often diverted to Japanese use or stored against future need. Japanese Army regulations apparently required commanders to maintain a one-year reserve of medical materiel, and officers at the camps obeyed the rule without regard to their captives' present needs. Worsening conditions was Japan's own desperate situation; by 1945 prisoners and internees stood the last in line for supplies, needed by all, that could neither be imported nor moved safely within Japan itself.[60]

In spite of everything, the record of the Japanese camps was not entirely dark. Conditions varied greatly from one to another; in the showplace officers' camp at Zentsuji, physical abuse was rare, a well-stocked camp library offered reading matter, and sports equipment and amateur theatricals provided recreation

[58]Weinstein, *Barbed-Wire Surgeon*, pp. 189–211; Knox, *Death March*, pp. 367–77. Moxibustion is the process of creating a counterirritant by burning dry herbs against the skin. The Japanese surgeon in charge at Shinagawa was later convicted of war crimes and sentenced to death, but was reprieved after being found insane. See Chapter XIII.

[59]Quotation from Knox, *Death March*, p. 377. See also Goodman, *M.D.P.O.W.*, pp. 185–86.

[60]"International Military Tribunal for the Far East," 4:1058, 1132, CMH–L. See also Goodman, *M.D.P.O.W.* pp. 185–86.

to healthy prisoners. (Even here the Japanese medical officer, a Lieutenant Saito, and his orderlies seemed indifferent to the needs of the sick, who survived largely through the efforts of a Navy surgeon, Capt. H. J. Van Peenan, MC.) At some camps American medics received substantial quantities of Red Cross shipments from the end of 1943 to the spring of 1945; a few prisoners, held in onetime health spas in Japanese mountain resorts, enjoyed mineral baths. As heartening as the supplies were the instances of kindness recorded from Japanese officials, guards, and civilians, who sometimes suffered at the hands of their own countrymen for their generosity of spirit toward many prisoners.[61]

Yet when all allowances have been made, the record of Imperial Japan in respect to its prisoners of war remained a dismal one. Neither occasional amenities nor individual kindness modified the sufferings of those who suffered daily beatings and hard labor, nor the fact that virtually all prisoners, even the lucky ones, were hungry most of the time. Even leaving aside such extremes as the torture and vivisection of downed airmen, the average prisoner lived a life that ranged from spare downward to unendurable.[62]

Understandably, many did not survive. Of the 25,580 Army and Navy personnel captured and interned in the Philippines, 10,650 died—a death rate of 42 percent, as against less than 1 percent for American prisoners of war in the Mediterranean and European theaters. Between 34 and 37 percent of all American servicemen imprisoned by the Japanese died in captivity. Surely, the toll would have been even greater if not for the efforts of the medical personnel who shared captivity and all its privations with them.[63]

[61]See, for example, Goodman, *M.D.P.O.W.*, pp. 86–97, 182–84. Van Peenan survived the war and was later promoted to rear admiral. A good account of the camp is given in Emerson, *Guest of the Emperor*, pp. 58–75, copy in CMH–L.

[62]On the treatment of airmen, see Chapter XIII. See also John M. Gibbs, "Prisoner of War Camps in Japan and Japanese Controlled Areas as Taken From Reports of Interned American Prisoners," pp. 53–65, Ms 4–4.5A AA, CMH; Kerr, *Surrender and Survival*, pp. 179–80.

[63]Office of the Adjutant General, "Army Battle Casualties and Nonbattle Deaths in World War II, Final Report, 7 December 1941–31 December 1946," pp. 92–95, copy in CMH–L; Gillespie, "Recollections," pp. 58–59, 86, file 314.7–2, HUMEDS, RG 112, NARA. See also Cohen and Cooper, *Follow-Up Study*, p. 38; Goodman, *M.D.P.O.W.*, pp. 153, 169; Herman, "Prison Diary," Sep 79, pp. 15–18, and Oct 79, pp. 3, 5. The long-term effects of imprisonment are briefly discussed in Chapter XIII, as are the atrocities by Japanese medical personnel later prosecuted in war crimes trials.

CHAPTER XII

Large-Unit War: Okinawa

While General MacArthur's forces from the Southwest Pacific Area struggled to reconquer the Philippines, those of Admiral Nimitz from the Pacific Ocean Areas gathered for an assault on Okinawa, the largest island of the Ryukyus and a prefecture of Japan itself. Fierce resistance was anticipated, and not only on the ground. Lying 900 miles from Manila and 1,200 from the closest bases in the Pacific Ocean Areas, the island was well within the range of land-based enemy aircraft flying from more than a hundred fields on Formosa and the southernmost home island of Kyushu. Partly for this reason, Nimitz sent his marines first against the tiny island of Iwo Jima in the Volcano Islands, 740 miles from Okinawa.[1]

Foretastes: Angaur, Peleliu, Iwo

The type of fighting that impended on Okinawa, against an elaborate system of inland defenses, had already been encountered during the Allied advance. The cave systems of Biak had claimed many casualties from MacArthur's forces. During the approach to the Philippines Admiral Nimitz' forces had met similar defensive systems in the Palaus, where casualties had also been heavy. On Angaur the 321st and 322d Regimental Combat Teams of the 81st Infantry Division waged a difficult struggle, costing more than 2,000 casualties.[2]

Overshadowed by Peleliu, Angaur received little of the attention it deserved at the time, in part because the operation officially lasted only three days (17–20 September 1944). In reality, the Japanese defenders who were "dug in on the cliffs and in caves" not only inflicted large numbers of casualties but continued to resist until mid-October, forcing the 322d Regimental Combat Team to undergo a bloody, wearing process to clean them out. Overall, the medical support, like the conduct of the fighting troops, was "beyond reproach," with efficient organization in the landing of medical units,

[1]Roy E. Appleman et al., *Okinawa: The Last Battle*, United States Army in World War II (Washington, D.C.: Historical Division, Department of the Army, 1948), pp. 1–7; Jeter H. Isely and Philip A. Crowl, *The U.S. Marines and Amphibious War: Its Theory and Practice in the Pacific* (Princeton: Princeton University Press, 1951), p. 533; I. T. M. Gow, with H. P. Willmott, *Okinawa 1945: Gateway to Japan* (London: Grub Street, 1986), pp. 20–42.

[2]Robert Ross Smith, *The Approach to the Philippines*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1953), pp. 494–575.

quick evacuation from the beaches, and timely support provided by the 17th Field Hospital and the 41st Portable Surgical Hospital. But the harsh rocky terrain made evacuation difficult from inland, the Japanese regularly fired on litter-bearers, and the slow process of destroying enemy bunkers one by one resulted in many wounded. Losses of aidmen were high, and heroism among them was common. In one fighting unit five of the seven Silver Stars awarded for bravery went to medics.[3]

Peleliu proved even more difficult to capture. The Japanese garrison was larger, and the Japanese commander, Col. Kunio Nakagawa, had constructed a complex of defensive positions. Here the marines, after establishing a beachhead and capturing the island's airfield, were halted in "savage and costly fighting." Losses were severe; one regiment lost over half of its strength. Recalled from Angaur and attached to the 1st Marine Division, the 321st Regimental Combat Team joined in the struggle. The terrain, which the Americans called Bloody Nose Ridge, was sowed with mines and heavily defended by mutually supporting strongpoints. Casualties had to be extracted by the use of ropes and pulleys. Even after the enemy's resistance had supposedly been broken, mopping up proved harder than on Angaur. For an island that planners had optimistically expected to seize in four days, fighting against some pockets went on until late November. More than 11,000 Japanese died on Peleliu, and the 81st Division during its battle in the Palaus suffered almost 3,300 battle casualties.[4]

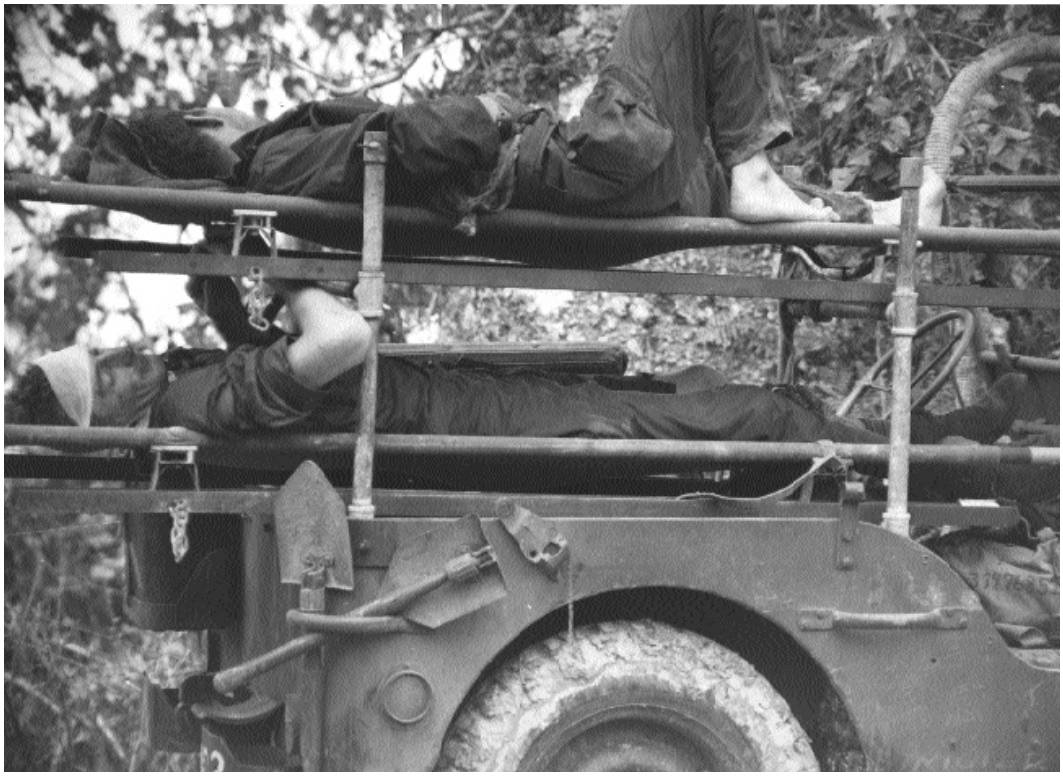
The attack on Iwo Jima became legendary for the sacrifices it entailed. The volcanic and sandy island was needed, in the opinion of American planners, as an air base to halt Japanese raids, to provide returning B–29s an emergency landing site, and to facilitate fighter support of the long-range bombers. The bombers, in turn, not only had a strategic mission against Japanese cities but also would soon be employed tactically, at Nimitz' request, against Kyushu airfields in support of the Okinawa invasion.

On 19 February 1945 three marine divisions of the V Amphibious Corps assaulted the barren 5-mile-long island, supported by four medical battalions, one for the corps and each division; an evacuation hospital; and a field hospital. Offshore support featured the usual attack transports, hospital LSTs, and a hospital ship. Maturity gained in earlier campaigns keynoted the mounting of the operation. But in many brutal lessons the Japanese had also learned how to defend an island. Iwo was heavily fortified, and from caves and bunkers above the beaches the defenders saturated the landing areas with accurate and deadly fire.

Casualties were extraordinarily heavy. A party of battalion medics, led by two young medical officers, faced a typical situation:

[3]Buell Whitehill, "Administrative History of Medical Activities in the Middle Pacific," block 18c, pp. 22–27 (quotations, pp. 26, 22), file 314.7, Historical Unit Medical Detachment (HUMEDS), Record Group (RG) 112, National Archives and Records Administration (NARA), Washington, D.C.

[4]Ibid., p. 51, file 314.7, HUMEDS, RG 112, NARA, gives 1,285 division casualties for Angaur and 2,709 for Peleliu, versus the above statistics from Smith, *Approach to Philippines*, p. 573. Quotation from Frank O. Hough, *The Assault on Peleliu* (Washington, D.C.: Historical Division, Headquarters, U.S. Marine Corps, 1950), p. 83.



81ST DIVISION CASUALTIES IN A JEEP AMBULANCE

Wounded men were lying all around. It was impossible to stand erect on the beach, and the corpsmen crawled from casualty to casualty to bandage wounds and administer morphine and plasma. Within an hour after the aid station had been set up, a shell exploded at one side and fragments from it slashed into several of the men. Dr. [William] McHugh, a big, young, bluff Irishman, swore at the bad luck. . . . At best the corpsmen could only work the wounded back in jumps and starts, stopping in shellholes to get their breath. Some of the corpsmen, who would normally have gone inland in search of casualties, did not get off the beach, for the wounded never stopped coming back.[5]

Fire was so intense that the island's thin vegetation was virtually erased. Casualties ran in excess of 1,000 a day for twenty-one consecutive days. Holding them ashore remained excessively dangerous, and almost 18,000 had to be evacuated from the island during the month that followed the first landing despite the slow, steady progress of the attack. Complicating care were high losses among medical personnel. Some marine units lost two-thirds of their corpsmen. Medics were killed attending casualties; beach parties were blown up with the injured; landing craft carrying the wounded and their attendants were sunk offshore. Some medical units took higher losses than assault units, because

[5]Department of the Navy, Bureau of Medicine and Surgery, "The United States Navy Medical Department at War, 1941–1945," 1:400–66 (quotation, pp. 415–16), files of Bureau of Medicine and Surgery Archives (BMSA), Washington, D.C.

they could not disperse and hide themselves and the casualties.

The availability of whole blood and penicillin greatly assisted the wounded, and the island, as sterile as it looked, was remarkably free from disease through the battle and afterward. The Army's 38th Field Hospital landed in the second week and began to receive wounded marines, and by the end of March the conquered island had been turned over to an Army garrison force. While it lasted, the struggle had been the most intense waged by American forces in World War II, costing the attackers over 6 casualties per 1,000 troops per day—more than twice that of the battle of Normandy and almost six times that of the Sicilian campaign.

Americans fighting in the Pacific and the public at home were both shocked by the extraordinary losses—more than 24,000 marines and sailors, of whom almost 21,000 were battle casualties. As a vast Allied armada of 1,600 ships carrying 550,000 troops closed in on Okinawa, news from Iwo Jima grimly confirmed the belief of American planners that the cost of attacking Japan's inner defenses was certain to be high.[6]

Planning the Attack

American planners had decided to seize first the Kerama Islands, a small group off the southwest coast of Okinawa, as a base for shipping. The 60-mile-long Okinawa was to be invaded at a point midway up the west coast, north of the capital of Naha, on beaches near the town of Hagushi. Three marine divisions of the III Amphibious Force would push north, and the four divisions of the Tenth Army's XXIV Corps would move south. Command of the whole force ashore would fall to Lt. Gen. Simon B. Buckner, Jr., now the Tenth Army commander. The medical plan was primarily the work of General Willis, the USAFPOA chief surgeon since November 1944. Promising the troops "all they need, when and where required," he deliberately sought to incorporate all the lessons learned thus far in the Pacific war.[7]

Certainly, experience was at hand. Though the Tenth Army was a new creation, the principal medical officers of the invasion force were veterans of earlier campaigns. Col. Laurence A. Potter, MC, the XXIV Corps surgeon, had served as 7th Infantry Division surgeon at Attu and as corps surgeon at Leyte. Tenth Army surgeon Col. Frederick B. Westervelt, MC, was an experienced staff officer whose background meshed well with Potter's. Together they planned for the medical support they believed the Tenth Army units would need, fitting their requirements into the general framework established by the Navy.

But much of the work of the campaign fell to a third figure, already familiar to the medical personnel of the Pacific theaters. General Maxwell

[6]Ibid., 1:423, 464, BMSA. See also OofSurg, USAFPAC, ETMD, 9 Nov 45, app. C, pp. 16–23, and Army Service Forces (ASF) Monthly Progress Rpt, 30 Sep 45, sec. 7, pp. 2, 4, The Historical Unit (THU) Note Cards, Historians files; Whitehill, "Medical Activities in Middle Pacific," block 18f, 1:6, file 314.7. All in HUMEDS, RG 112, NARA. Of the total personnel cited for the Okinawa invasion, about 350,000 manned the fleet and about 200,000 comprised the Tenth Army and the Island Command. Task Force 57, a carrier group used to screen against attacks from Formosa, belonged to the British Pacific Fleet. All other units were American.

[7]Rpt (Extract), Plans and Opns Sec, OofSurg, USAFMIDPAC, n.d., sub: Historical Account of Experiences Since Pearl Harbor, p. 2, Historians files, HUMEDS, RG 112, NARA.

moved from the South Pacific to become surgeon of the Tenth Army's subordinate Army Garrison Force, commonly called the Island Command, under Maj. Gen. Fred C. Wallace. Outranking Westervelt, Maxwell was assigned all responsibilities for evacuation, hospitalization, preventive medicine, and medical supply—most of the duties normally handled by the army surgeon. Since Maxwell could bring only a few of his staff with him, Westervelt placed most of his own personnel on special duty with the Island Command medical section. This surprising arrangement, for which no clear rationale emerges from surviving records, might have caused much difficulty but apparently did not—a tribute to the pragmatism of both the Island Command and Tenth Army surgeons.[8]

In addition to the usual organic units, each Army division was to be backed up by a field hospital, two portable surgical hospitals, and several anti-malaria units. Ashore, the portables would assist the clearing station platoons and would advance by leapfrogging to provide frontline support as soon as the field hospital landed. The XXIV Corps brought with it a Tenth Army field hospital and a station hospital, strengthened by specialist personnel from a general hospital. An Army evacuation hospital was lacking. The corps' 71st Medical Battalion was to organize evacuation from the clearing station to either the shore party or captured airfields. The corps also brought medical supply teams and additional anti-malaria units. Tenth Army units would return to the control of army headquarters once the latter came ashore.

The multiplication of preventive medicine units reflected inaccurate medical intelligence that pictured Okinawa as a pesthole. In fact, the rugged subtropical island was to prove exceptionally healthy, in this respect perhaps the least threatening of any that the relatively lucky Central Pacific forces had yet fought upon. As Westervelt noted on 1 May, "So far our troops have had less sickness than in garrison." Like the Army units, each marine division received a field hospital and a Navy malaria and epidemic control unit; additionally, the III Amphibious Corps had two evacuation hospitals attached, providing a more complete chain of evacuation than the Army possessed.[9]

As usual, an Army shore party and a Navy beach party would guide evacuation to vessels offshore, consisting of Army and Navy hospital ships, hospital LSTs, and converted APAs (transport, attack). The Navy hospital ships were truly floating hospitals, with complete medical, surgical, and neuropsychiatric facilities aboard; additionally, by stocking medical supplies, the Navy ships could act as resupply points for other vessels. The Army hospital ships were

[8]Whitehill, "Medical Activities in Middle Pacific," block 18f, 1:72–73, file 314.7, HUMEDS, RG 112, NARA.

[9]In the end the Army provided eleven field hospitals and eight portables. See ibid., 1:23–24, file 314.7; Comments (quotation) of [Col Frederick B. Westervelt, Surg], Tenth Army, 1 May 45, Encl to Ltr, Brig Gen John M. Willis, CSurg, USAFPOA, to Maj Gen Norman T. Kirk, SG, Wash., D.C., 8 May 45, file 312.1 Kirk-Willis Correspondence (SWPA); Rpt (Extract), OofSurg, USAFMIDPAC, 24 Sep 45, sub: Okinawa Participation, sec. 13, pp. 1–2, file 370.2; CSurg, USAFMIDPAC, Annual Rpt, 1945, p. 36, file 319.1–2; Surg, 77th Inf Div, Quarterly Rpt, Apr–Jun 45, p. 1, THU Note Cards, Historians files; and 77th Inf Div AAR, Okinawa, 25 Apr–30 Jun 45, pp. 74–75, THU Note Cards, Historians files. All in HUMEDS, RG 112, NARA. See also "Navy Medical Department at War," 1:554, BMSA.

less elaborate, for they were conceived as evacuation vessels—hospital transports—and served effectively in that role, returning about a sixth of the 388,000 evacuees to the United States during 1944 and the first half of 1945, or about the same number as returned by air. By far the largest number, however, was carried by troop transports.

At Okinawa the hospital ships would first display their Geneva markings, but, after two attacks, would hide blacked-out among the transports at night. The LSTs would provide patient care and would also serve as control points, directing the flow of wounded to the APAs and the hospital ships. To shuttle the wounded from shore to ship and from ship to ship, the invasion force would rely on seagoing ambulances. Landing craft in the first four waves were designated to return wounded to the hospital ships for treatment, and craft under the control of the shore party commander would continue the work after the troops moved inland.[10]

By ship or plane the wounded would be evacuated to bases in the Marianas, Hawaii, and the United States. Evacuation policy followed the familiar pattern: in the assault phase, immediate; when the island was secured, thirty days. Air evacuation to the Marianas was slated to begin five days after the initial assault, with the Air Transport Command's Pacific Division taking the majority of casualties to Saipan initially and to Oahu later. Army personnel worked on two hospital ships with Navy crews, and two of the hospital LSTs were staffed by Army surgeons as well as by Navy beach party medical sections.[11]

Hospitals to the rear prepared for an influx of casualties. Using the Saipan campaign as a guide, the joint headquarters estimated 30,000 in the first sixty days, with about three-quarters wounded. Some 16,000 beds were to be made available in the Marianas and Oahu, about equally divided between the Army and the Navy. Army hospitals in the advance casualty reception centers expanded, including a new 5,000-bed hospital center on Tinian. Care on Okinawa itself was slated to increase greatly in the months after the initial landing, with an array of hospitals, laboratories, and specialized units of various types scheduled to land in a prearranged order. As in the Philippines, military government detachments were assigned the task of dealing with a large and, in this case, presumably hostile population.[12]

Seemingly everything possible in the way of medical supplies was provided. The Tenth Army received for the assault 25,000 litters, 50,000 blankets, 7 billion units of penicillin, 30 million vitamin tablets, 100,000 cans of footpowder, and 100,000 iodine swabs. In other respects, some acknowledged gaps existed in the preparations for the attack. Many of the troops had little opportunity for training; those on Leyte had hardly rested from the last campaign before they embarked for the new one. Shortages in bed strength existed; Colonel Westervelt had received only 4,500 of the 8,000 mobile beds he asked for, and he lacked

[10]ASF Monthly Progress Rpt, 31 Jul 45, sec. 7, pp. 34–35; OofSurg, 96th Inf Div, ETMD, 19 Jul 45, p. 2. Both THU Note Cards, Historians files, HUMEDS, RG 112, NARA.

[11]Whitehill, "Medical Activities in Middle Pacific," block 18f, 1:41–42, file 314.7, HUMEDS, RG 112, NARA.

[12]Ibid., 1:22–23, file 314.7, HUMEDS, RG 112, NARA; Appleman et al., *Okinawa*, p. 35.

an Army evacuation hospital, none being available in the Pacific Ocean Areas. On the other hand, Army medical personnel for the operation totaled 10,773—fewer than for Luzon but far more than for any of the previous operations in the Pacific Ocean Areas. As on Iwo Jima, blood banks would be established ashore and whole blood would be made available as far forward as the collecting stations. The medics carried improved first aid kits, and sturdy Quonset huts were to replace tents for field medical units during the garrison phase. American wartime productive capacity, like the nation's military maturity, had reached its zenith and in most respects an ample allotment of resources had been made for the casualties to come.[13]

The Battle Opens

The 77th Infantry Division landed in the Keramas late in March, seizing the islands in a swift conquest marked by low casualties. Then on L-day, 1 April 1945, a pleasant Easter morning, the invasion of Okinawa began. Lying in the Japan current, the island is structurally as complex as Guam, surrounded by reefs, its mountains encrusted with coral. The climate is temperate, with wooded areas clad in conifers. On the day of the invasion the morning air was cool, and little resistance was encountered on the Hagushi beaches. The enemy appeared to have withdrawn, giving notice of his presence somewhere inland only by light artillery fire.[14]

The campaign ashore seemed easy as the American forces moved inland. Two airfields scheduled for capture on L+3 instead fell on the first day, in usable condition—one to the soldiers, the other to the marines. To the north lay rugged pine-clad mountains, seemingly the logical place to mount a defense. But most of the population, the towns of Naha and Shuri, and other airfields lay to the south. Here the land featured an old limestone plateau, pitted by the rains and marked by low ridges and escarpments. This too provided many natural fortresses for the defenders to exploit.

The Tenth Army now divided. The III Amphibious Corps swung north in the days that followed. The advance met little resistance, and the marine medical units found their major problem in keeping up with the line units. Army forces moved more slowly southward, and the medics, blessed with a measured advance and few casualties to treat, found no difficulty in adhering to established plans. On L-day the clearing stations of both the 7th and the 96th Infantry Divisions had come ashore, and that of the 7th Division opened for surgery. Similarly, the division's two portables had arrived, set up, and begun to receive casualties, mainly civilians injured in the prelanding bombardment. On L+2 the 71st Medical Battalion landed, allowing divisional units to move forward.

By 7 April, when 7th Division forces reached the east coast of Okinawa, two field hospitals had landed, the 69th opening in a wrecked school building

[13]Whitehill, "Medical Activities in Middle Pacific," block 18f, 1:50, file 314.7, HUMEDS, RG 112, NARA.

[14]Ibid., 1:22–23, 45–47, file 314.7; Surg, 77th Inf Div, Quarterly Rpt, Apr–Jun 45, p. 1, THU Note Cards, Historians files; OofSurg, Tenth Army, ETMD, 20 Jul 45, p. 1, file 350.05. All in HUMEDS, RG 112, NARA. See also Appleman et al., *Okinawa*, p. 74; "Navy Medical Department at War," 1:557–58, BMSA. A detailed account of the 7th Infantry Division's landing is given in Samuel Eliot Morison, *History of United States Naval Operations in World War II*, 15 vols. (Boston: Little, Brown and Co., 1964), 14:140–55.

strewn with rubble. The XXIV Corps had set up an evacuation station, and three hospital LSTs and a fourth with a blood bank lay offshore. The lack of enemy resistance allowed the medical system ashore to develop without hindrance, as well as offshore evacuation to be carried on without the frenzy that had attended other assaults on contested beaches. Despite increasing air attacks on the fleet, a textbook operation seemed to be in progress.[15]

The enemy, however, lay in wait. The Japanese, under Lt. Gen. Mitsuru Ushijima who had decided not to oppose the invasion on the beaches but to fight inland, dug in for shelter from American firepower. The defending force consisted of two divisions and an independent brigade (about 67,000 soldiers in all, of whom an unknown number were Okinawan draftees or reservists), as well as naval units, 24,000 Okinawan home guardsmen, and a mass of conscripted laborers. Even older schoolchildren had been impressed into the force. Ushijima's units included a tank regiment and a strong concentration of artillery, much of it intended for the Philippines but impossible to ship because of the disruption of Japanese maritime traffic by American submarines and planes. In all, the defenders numbered over 100,000, holed up in 60 miles of natural caves and artificial tunnels.[16]

Action began as the ships lying offshore were bloodied by a wave of kamikazes. After 6 April scattered air attacks grew rapidly into a full-scale assault, with ten major and countless minor onsets, some of which employed a 600-mph piloted flying bomb, the *Ohka*. The first medical surprise of Okinawa was that the ships, supposedly the refuge of the wounded, proved more dangerous than the Hagushi beaches, incurring "the greatest casualty load among their own personnel . . . in the entire war."[17]

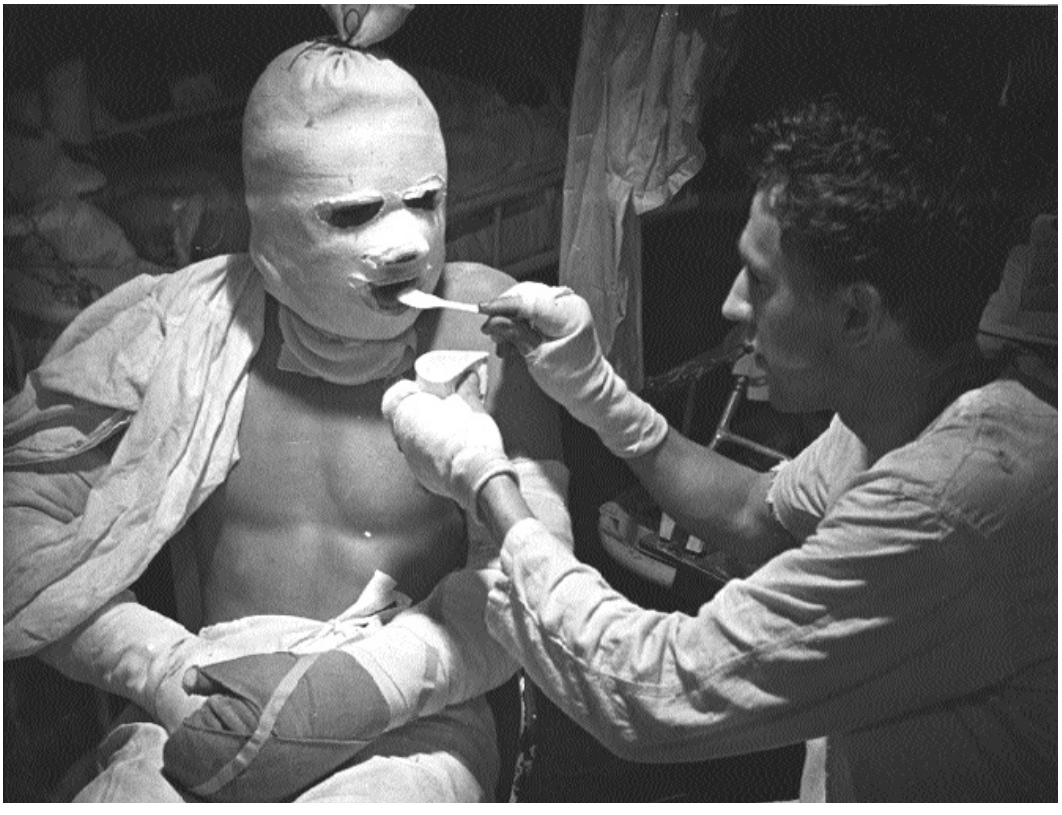
Kamikazes baffled Navy medical officers, who could find no way of making rational plans to meet such "abnormal and barbarous" tactics. Typical was the case of the USS *Morrison*, one of the radar picket ships that formed the first target of the suicide planes. Aboard, no safe area could be found for a main dressing station, and no rational distribution of medical personnel or equipment could be made. Instead of acting as a team, medics could only render first aid to the wounded nearby and, like their comrades, pray. During the final attack on 4 May only one injured soldier reached the dressing station, where he was trapped when the ship sank after being hit four times in ten minutes. In the water one doctor and an uninjured corpsman swam to the various groups of survivors, trying to give first aid. A thick layer of fuel oil acted as a palliative for the many severe burns. Taken aboard a little support craft, 115 wounded were jammed together in "complete disorder," and little treatment could be given but morphine to relieve pain.[18]

[15]Surg, XXIV Corps, Daily Journal (copy), 1–8 Apr 45, file 319.1; 69th Field Hosp Quarterly Rpt (copy), Apr–Jun 45, p. 3, file 319.1; ASF Monthly Progress Rpt, 30 Sep 45, pp. 6–8, THU Note Cards, Historians files. All in HUMEDS, RG 112, NARA. See also "Navy Medical Department at War," 1:560, BMSA.

[16]On Japanese plans and tactics, see Thomas M. Huber, *Japan's Battle of Okinawa, April–June 1945*, Leavenworth Paper no. 18 (Fort Leavenworth, Kans.: Combat Studies Institute, U.S. Army Command and General Staff College, 1990), pp. 13, 19–20.

[17]Quotation from "Navy Medical Department at War," 1:558, BMSA. See also Morison, *Naval Operations in World War II*, 14:170.

[18]Quotations from "Navy Medical Department at War," 1:562–63, BMSA. See also Morison, *Naval Operations in World War II*, 14:254–55.



FEEDING A SEVERELY BURNED SEAMAN

Such attacks, ultimately involving thousands of enemy planes (kamikazes, dive bombers, and other aircraft), battered the fleet for more than two months. Two hospital ships fell victim, despite the precaution of having them stand out to sea at nightfall when the carrier planes returned to their vessels and suicide craft struck hardest. The *USS Pinkney* and the *USS Comfort* were both hit on 28 April, with combined losses of 65 dead and 60 wounded; on the *Comfort* the attacking plane crashed through three decks to explode in the surgery, which was crowded with medical personnel and casualties. Anxiety, especially on the picket ships, caused psychiatric problems to appear, brought on by the frequency of the attacks, their suddenness, and the intense fires that were their commonest result.[19]

Even seamen who survived were often critically hurt. "I doubt," wrote Samuel Eliot Morison, "whether anyone could fully appreciate the results of this desperate fury of the Kamikaze Corps unless he were present, or in a hospital where wounded survivors were treated." Most were "horribly burned," often

[19]Whitehill, "Medical Activities in Middle Pacific," block 18f, 1:103, file 314.7, HUMEDS, RG 112, NARA; "History of USS Comfort (AH 6)," file USS Comfort, BMSA.

spending agonized hours in the sea before rescue. In rear area hospitals they could be seen, swathed like mummies, breathing and taking food through tubes. But death by blast, fire or water was all too common. The Navy, alone of the services, would record more dead than wounded in the battle for Okinawa—a remarkable situation, possibly unique in its history.[20]

The Tempo Quickens

Meanwhile, the struggle ashore became far more difficult. Enemy resistance at first was light for the marines, who were moving north. Land evacuation was slowed by heavy rain, blown bridges, and washed-out roads that caused amphibians to be pressed into service again. Tougher was the conquest of the rocky Motobu Peninsula. Accustomed to facing fixed defenses on small islands, the marines reverted to textbook maneuvers to envelop the main enemy stronghold, which fell on 17 April.

But the hardest fighting in the north occurred on a small offshore island, Ie Shima. On 16 April the 77th Division invaded to secure a major military prize, large airfields that made the island resemble "a huge, immovable aircraft carrier." A strong garrison of 2,000, backed by a fanatically loyal and determined civil population numbering perhaps 5,000 more, fought a most tenacious battle in the town of Ie and on the slopes of a dead volcano, Iegusugu, which American troops called the Pinnacle.[21]

Here the famed journalist Ernie Pyle was among 172 dead, while 902 wounded filled the medical units. Fighting was marked by suicidal fury, including attacks by island women wielding wooden spears and by soldiers and civilians who charged through their own mortar fire. One American soldier "had his arm broken by the flying leg" of a Japanese soldier, armed only with a satchel charge, who had attacked as a human bomb.[22]

Despite these bizarre elements, the ridges of Iegusugu formed a classic Japanese defensive position. The rough terrain was pocked with fortified caves and hidden bunkers, both connected by tunnels, and was sown with crude but effective mines. Lacking either clearing elements or portables, which had been reserved for later operations on Okinawa, the collecting companies handled all casualties. The wounded were brought by litter to collecting points and by jeep ambulances to the beaches. Mining made the roads perilous, and two ambulances carrying casualties, drivers, and a collecting company commander were destroyed. Poor sanitation, piles of enemy dead, and a high dengue rate briefly added a serious disease outbreak to the tale of woe. The fight lasted only five days. Hospital LSTs cared for the wounded offshore, and the sanitary problem was quickly solved. But Ie Shima was an image in miniature of the fighting that in the meantime had begun in southern Okinawa.[23]

Here the American divisions had spent the first week of April reducing heavily defended outposts. Then on the ninth they encountered the enemy's

[20]Over 4,900 died as against 4,824 wounded. See Morison, *Naval Operations in World War II*, 14:195, 282.

[21]Appleman et al., *Okinawa*, p. 150.

[22]Ibid., p. 160.

[23]Surg, 77th Inf Div, Quarterly Rpt, Apr–Jun 45, pp. 1–3, THU Note Cards, Historians files, HUMEDS, RG 112, NARA.

main line—a complex of fortified ridges concealing a tightly woven net of mutually supporting strongpoints that protected the ancient Okinawan capital of Shuri. Japanese medical preparations for the defense apparently had been sound, with aid stations dug into the underground complexes and with regulations for sanitation and exercise to maintain the health of troops who would spend much of their time entombed and waiting.[24]

Sheltered from naval and air bombardment, with artillery and mortars registered on the lines of approach, the Japanese again proved themselves to be brave and unrelenting foes. The progress of the fighting was marked by an endless number of "desperate adventure[s] in close combat." Suffering heavy losses, the Americans fought back with tank-infantry teams that drove the defenders back into their caves before blasting the openings with high explosives. Fighting was intense and constant. The 383d Infantry, 96th Division, lost 326 in one day; one battalion lost half of its complement. Writing to the USAFPOA chief surgeon, General Maxwell reported that "the opposition has been terrific, with the heaviest mortar and artillery fire [that] any of our men have ever experienced." Accurate enemy fire aimed at command posts in at least one instance fell on a nearby aid station as well.[25]

Yet attrition tolled more heavily on the Japanese, who, with fewer forces, were cut off from resupply. Familiar enemy doctrine emphasized attack, and the instincts and personality of the *32d Army*'s fiery chief of staff, Lt. Gen. Isamu Cho, pointed in the same direction. A counterattack, however, allowed American firepower free rein to savage Japanese soldiers, who withdrew bloodied to their defenses. In turn, General Buckner brought in his reserve division, the 27th, and ordered a full-scale assault, preceded by air strikes and the heaviest bombardment of the Pacific war. The attack on 19 April failed, resulting in heavy casualties and the loss of twenty-two tanks.

Then, in four days of sustained fighting as bitter as any in the campaign, the Americans worked their way into positions on the outer Shuri defense ring. Enemy defenses proved to have been masterfully placed. Japanese soldiers exploited reverse slopes brilliantly; they yielded no ground but rather died by flame and demolition. American losses continued to be heavy. Half-tracks and tanks evacuated many wounded, but heavy casualties and fatigue sapped the combat efficiency of the three divisions—7th, 27th, and 96th—so far committed.[26]

Hence, in late April and early May, Buckner reorganized. He sent the 27th Division north to mop up; brought the marines of the III Amphibious Corps south to aid the attack; and replaced the battered 96th Division with the 77th, fresh from its victory on Ie Shima. The new troops arrived just in time to receive, on 4 May, the brunt of a valiant but hopeless Japanese counterattack, again undertaken at the urging of excitable officers who had lost patience with a strategy that amounted to slowing

[24]Appleman et al., *Okinawa*, pp. 189–90, 210.

[25]Ibid., pp. 118, 129, 256 (first quotation); Ltr, Brig Gen Earl Maxwell, OofSurg, Island Cmd, to Brig Gen John M. Willis, CSurg, USAFPOA, 4 May 45, p. 1 (second quotation), Encl to Ltr, Willis to Kirk, 8 May 45, file 312.1 Kirk-Willis Correspondence (SWPA), HUMEDS, RG 112, NARA.

[26]Huber, *Japan's Battle of Okinawa*, pp. 67–68.

the Americans by dying in place. Four days of desperate fighting produced 5,000 enemy casualties, to no purpose. American losses in the hardest hit divisions were high—379 in the 7th and 77th together—but not comparable to those of the Japanese.

Nevertheless, the enemy still was able to wage an effective battle of attrition. On 11 May the 1st and 6th Marine Divisions and the 77th and 96th Divisions (which had returned to relieve the 7th) opened an assault on the inner Shuri line. The fighting again featured heavy Japanese mortar and artillery barrages from reverse slopes, which the Americans endured without the defenders' benefit of prepared defenses. The Japanese infiltrated at night; the Americans pressed forward during the daylight hours. Incessant sniping took its toll on both armies.

Seizure of a single hill—the Sugar Loaf—cost the 6th Marine Division 2,662 killed or wounded and 1,289 cases of combat fatigue. On Ishimmi Ridge, where the 77th Division's 307th Infantry seized high land only to be encircled, "the dead lay in pools of blood where they fell, or were pushed from holes to make room for the living. An aid man [*sic*], although wounded himself, continued his work until his supplies were exhausted." Relieved at last, the company that had made the first attack returned the division area, carrying its wounded, having lost 75 percent of its 204 officers and enlisted men.[27]

In the last week of May furious rains bogged down the heavy equipment, making evacuation by wheeled vehicle almost impossible. At one airfield almost 14 inches of rain fell during May, hindering everything from combat support to resupply to spraying DDT. Eight litterbearers were needed to move a single litter. As vehicles were immobilized, evacuation times grew, and the combat forces endured new misery in the water-filled mudholes that sheltered them from the enemy. Yet the Japanese at last showed signs of cracking. On the twenty-seventh the Okinawan capital of Naha fell almost without bloodshed to the marines, a ruin more complete, if possible, than Manila had been. Two days later Shuri Castle was captured by an enveloping maneuver of the 7th Division, exploiting night and rain. A Japanese counterthrust led to intense fighting in which T. Sgt. William Goodman, the only medic left in Company I, 32d Infantry, 7th Division, stopped bandaging the wounded long enough to kill five infiltrators. But the enemy's fortified area was in danger as the American left and right wings both advanced.[28]

By the end of the month the toll on both armies was heavy. The Japanese had lost at least 50,000 dead, including many of their best troops. The American ground forces had lost over 26,000 killed, wounded, and missing. The rate of psychiatric casualties apparently was higher than in any previous Pacific battle. But the threat of encirclement for the Japanese holding the Shuri defenses continued to grow. Hence, General Ushijima prepared for his last stand, skillfully withdrawing into redoubts dug into hill masses, called Yaeju-Dake and Yuza-Dake, in extreme southern Okinawa. For another three weeks

[27]Appleman et al., *Okinawa*, pp. 302, 323, 336 (quotation), 338.

[28]Ibid., p. 382; Island Cmd AAR, Okinawa, 30 Jun 45, p. 8-XIV-7, THU Note Cards, Historians files, HUMEDS, RG 112, NARA.

American soldiers and marines fought on, until the enemy's last positions fell. By 22 June, as the mop-up began, both commanders were dead, General Buckner killed by a chunk of coral hurled out by the explosion of a shell and General Ushijima, to whom Buckner had offered terms of surrender, by his own hand in ritual *seppuku*.

Despite this theatrical conclusion to the last great battle of World War II, some 7,400 Japanese soldiers—an altogether unprecedented number—surrendered, most at the end of the campaign. Civilians emerged from hiding; no mass suicides occurred on Okinawa itself, though the story was different on the offshore islands. The next phase of the work could now proceed in greater security—not only to rebuild Okinawa as a base for the coming invasion of Japan but also to minister to the human wreckage of the 93-day campaign for the Ryukyus, the longest since Guadalcanal and the bloodiest of the entire Pacific war.[29]

The Medical Problem

The struggle had featured large American units in continuous, grinding combat with an entrenched, desperate, well-armed foe. But if it resembled European war in the numbers of men and cannon, the Okinawa campaign was essentially of the Pacific in the proportion of killed to captured among the defenders, in the tactics employed by both sides for the conduct of island warfare, in the assault of the kamikazes, and in the prodigious rains that reduced the lowlands to seas of mire.

As usual in the Pacific, medics were not spared, and their casualty rate was the highest of any branch except the infantry. Nor were the ranks easy to fill. The killing and wounding of enlisted medics left a continuing deficit of trained personnel in line units, because of the inevitable time lag experienced by the USAFPOA chief surgeon in obtaining replacements. Those who remained bore an added burden in the interim, making it necessary to pull soldiers from combat units—on one occasion, forty field artillerymen were sent forward as litter-bearers—to move the overflow of wounded who otherwise could not have been evacuated at all. Officer replacements were adequate in numbers, but Colonel Potter, the XXIV Corps surgeon, complained of the red tape that obstructed their use:

> An officer is killed—the Division prepares a requisition, sends it to XXIV Corps, we send it on to Tenth Army, who [sic] in turn, sends it to the Replacement Depot. During the week, the Medical Officer sits around at the Depot, while the Division operates short a medical officer, who is physically present on the Island and doing nothing.[30]

Evacuation at the front was typical of many Pacific struggles. Armed company and battalion medics, litter-bearers from the collecting companies, and infantry replacements worked in difficult terrain, hidden sometimes by chemical smoke. At all times they were targets of

[29]Appleman et al., *Okinawa*, pp. 184–474 (statistics); Isely and Crowl, *Marines and Amphibious War*, pp. 543–79; Hough, *Assault on Peleliu*, pp. 364–78. The Okinawa campaign officially ended on 2 July 1945. Losses at Iwo Jima were higher in proportion to the numbers engaged.

[30]Surg, XXIV Corps, Daily Journal (copy), 5 May 45 (quotation), file 319.1; 77th Inf Div AAR, Okinawa, 25 Apr–30 Jun 45, pp. 73–76, THU Note Cards, Historians files; OofSurg, 96th Inf Div, ETMD, 19 Jul 45, encl. 1, THU Note Cards, Historians files. All in HUMEDS, RG 112, NARA.



LITTER-BEARERS TRAVERSING OKINAWA'S DIFFICULT TERRAIN

aimed enemy fire. It was in such conditions that Pfc. Desmond T. Doss of the medical detachment, 307th Infantry, 77th Division, won the Medal of Honor. A conscientious objector who refused to carry a weapon and kept the Seventh Day Adventist sabbath every Saturday, Doss at the end of April was a company aidman during his unit's assault on a 400-foot escarpment. The troops seized the crest, only to be hit by furious fire from the reverse slope. As they scattered, Doss remained alone at the top to help casualties. He carried the wounded to the edge and, after tying them to litters, lowered them to friendly hands. On another occasion Doss treated those lying in the very mouth of an enemy-held cave; on a third, wounded himself, he gave up his place on a litter to a more severely injured soldier. Doss then splinted his own fractured arm with a rifle stock and crawled to safety.[31]

Savagery, bravery, and improvisation marked the front line as in all the Pacific fighting. Once out of the combat area, however, evacuation for the first time in

[31]WD GO 97, 1 Nov 45, p. 2; [77th Division Association], *Ours To Hold It High: The History of the 77th Infantry Division in World War II* (Washington, D.C.: Infantry Journal Press, 1947), pp. 303–04.

the experience of many veterans assumed the form dictated by field service regulations. The 77th Division surgeon reported that his main supply road was usable, that evacuation times were short, that an efficient shuttle of ambulances was easy to maintain, and that the wounded from the clearing station—aided by whole blood, for the first time available at collecting stations—were in good condition. Similarly, the 96th Division surgeon said that "the terrain and road nets [*sic*] lent themselves well to the needs of rapid evacuation." Before and after (though not during) the rains, such conditions briefly created the image of conventional warfare on Okinawa.[32]

Until the field hospitals came ashore, division ambulances moved casualties from aid stations to the Hagushi beaches, where clearing stations and portables awaited them. Once transferred to Navy beach party medics, they were carried by landing craft offshore to the hospital LSTs. Here, after treatment and sorting, the seriously injured were sent on to hospital ships and transports for evacuation to the Marianas. In the general hospitals on Saipan, the impact of Iwo Jima and Okinawa was abrupt. As casualties flooded in, surgical services burgeoned and ward medical officers stood round-the-clock duty.[33]

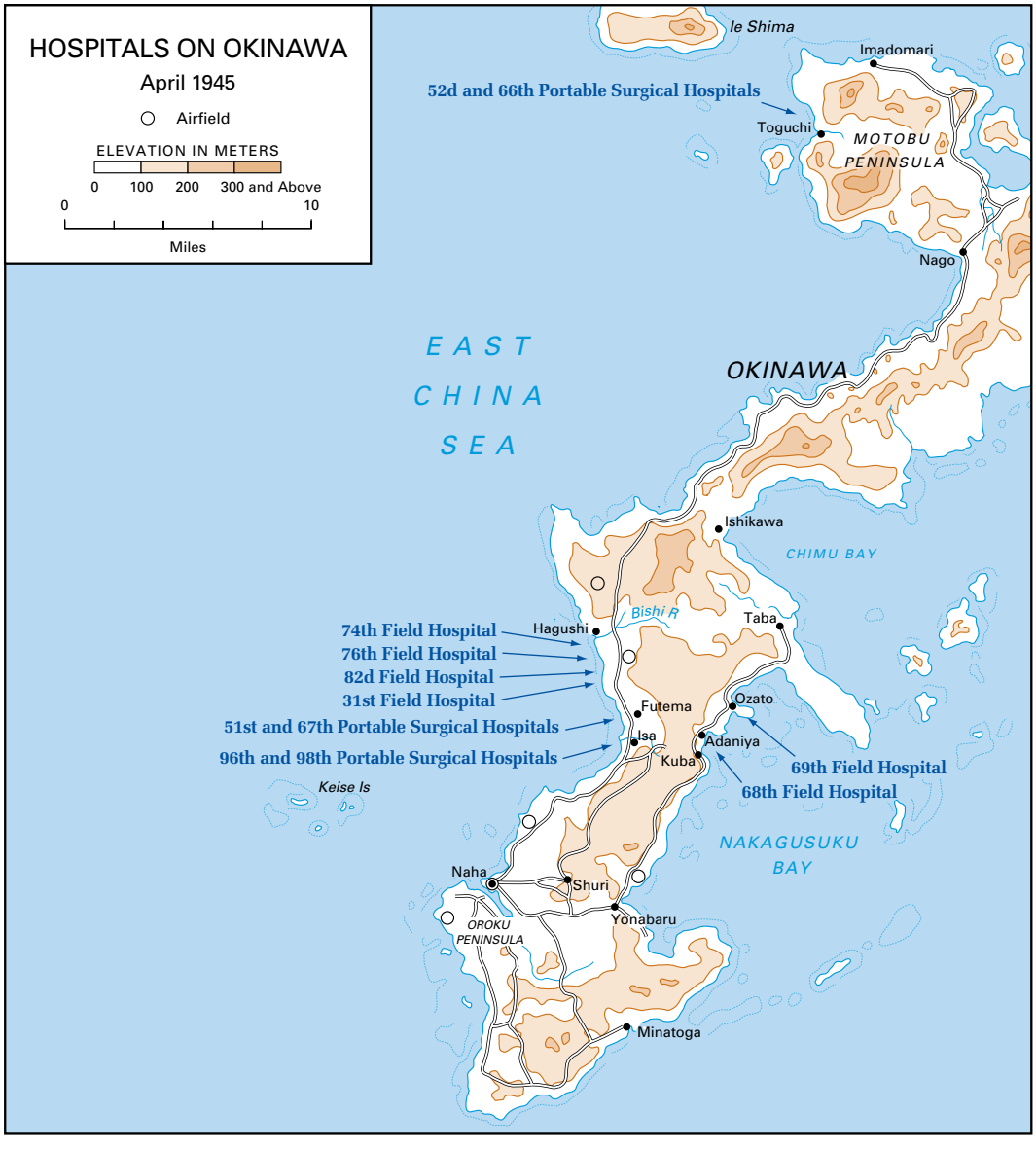
The treatment received by the wounded on Okinawa in many ways was a model of matured forward medicine. Beginning to arrive on L+5, field hospitals established themselves at road junctions south of the beaches (*Map 15*), some 4,000 to 6,000 yards from the fighting line—close enough that enemy shells sometimes landed in the hospital areas. Most worked under canvas, or in abandoned dwellings, and many used the lull that followed the landings to organize and prepare themselves for the heavy work ahead. At first under division control, they passed in sequence to the XXIV Corps and then to the Tenth Army, the higher headquarters, when it arrived. As the chain of evacuation grew more complex, corps clearing stations moved ahead of the hospitals, to treat less serious cases, and the corps' 71st Medical Battalion took over the movement of wounded from clearing stations to hospitals. Between 25 April and 20 June five field hospitals not attached to divisions also arrived. They worked in a variety of ways, some serving in effect as station and others as small evacuation hospitals. Four station hospitals arrived in late May and June, to receive the overflow of casualties from the fighting in the south.[34]

For most of the campaign the field hospitals were the key elements in treating the wounded ashore. They served diverse functions, just as the portables had during earlier small-unit fighting, receiving the sick and wounded. Yet, because the expected casualties from sickness did not materialize in the numbers the Army had anticipated, few hospitals, despite the heavy casualties, operated much in excess of their rated capacity. (In the 31st Field Hospital, for

[32]Surg, 77th Inf Div, Quarterly Rpt, Apr–Jun 45, p. 3; 96th Inf Div AAR, Okinawa, 1 Apr–30 Jun 45, p. 20 (quotation). Both THU Note Cards, Historians files, HUMEDS, RG 112, NARA.

[33]148th Gen Hosp ETMD, 20 Oct 45, pp.1–5, file 350.05, HUMEDS, RG 112, NARA.

[34]31st Field Hosp AAR (copy), Okinawa, 1945, pp. 1–4, file 319.1; 69th Field Hosp Quarterly Rpt (copy), Apr–Jun 45, pp. 2–4, file 319.1. Both in HUMEDS, RG 112, NARA. See also Tenth Army, "Action Report: Ryukyus, 26 March to 30 June 1945," pp. 11-XV-8 to 11-XV-14, U.S. Army Center of Military History Library (CMH–L), Washington, D.C.



MAP 15

example, the campaign brought in 7,660 surgical cases but only 876 medical cases.) Moreover, the field hospitals were well served by other units. Forward medical units, defending themselves in perimeters surrounded by "trip-flares, booby-traps, concertina wire and well-armed guard posts" were at the peak of medical and military efficiency. A constantly improving system of sorting and evacuation prevented the wounded from piling up, especially after the Tenth

Army's 96th Medical Battalion started work on 26 April. Soon the battalion established an Okinawa Evacuation Center, a centralized facility that moved casualties to ships, airfields, hospitals, and prisoner-of-war stockades. It also set up a special 500-bed hospital for prisoners. The portable surgical hospitals provided essential support close to the fighting line, although they soon faced heavy patient loads with small staffs intended for a different kind of war.[35]

The quality of care given by the field hospitals is less easy to assess. Planners had wisely strengthened these relatively low-echelon facilities so that each field hospital averaged twenty-two doctors instead of the authorized thirteen. Extra general, orthopedic, eye, and neurosurgeons were assigned, each with enlisted technicians to support his work. Surgical teams were organized, each consisting of two surgeons, an anesthetist, a surgical nurse, and three technicians. When the heavy influx of wounded began, many teams worked steadily for thirty-six to forty hours at a stretch; some split up to handle more cases. Under intermittent fire from the enemy, team members slept in foxholes close to their place of work.

Yet the surgical teams were few in number—the Tenth Army had requested twelve but received only five—and they worked, like the field hospitals as a whole, understaffed and underequipped. Shortages were noted in many critical specialties, including anesthesiology, neurosurgery, thoracic surgery, eye surgery, and maxillofacial surgery. For the first month the hospitals also lacked female nurses, who were excluded from Okinawa during that period. With such deficiencies, the field hospitals had to fill two demanding roles, their own traditional function of forward support and the duties of evacuation hospitals as well. Possibly as a result, consultants rated at least four field hospitals as weak in surgery. "We are finding," wrote Colonel Westervelt, "that one cannot make an evacuation hospital out of a 'souped up' field hospital. . . . Many of the casualties being received are terrible. Two and three limbs, complicated by belly and chest wounds, are not infrequent in one soldier." One basket case was found still alive twenty-four hours after losing all four limbs.[36]

While the hospitals struggled to care for the severely wounded, especially those with multiple injuries, more than 5,000 others with less severe problems—including the neuropsychiatric (NP), or white, cases that required less than fifteen days of hospitalization—never received complex treatment ashore. They were sent to the ships, and the evacuation system shouldered a burden that, for the sake of the fighting forces and the casualties themselves, ought to have been borne ashore.[37]

[35]Tenth Army, "Action Report: Ryukyus," pp. 11-XV-6 to 11-XV-25, CMH–L. See also 31st Field Hosp AAR (copy), Okinawa, 1945, p. 13, file 319.1; Ltr, 1st Lt Ted Bloodhart, CO, 5th Med Museum and Arts Det, thru CO, 18th Med Gen Lab, to CSurg, USAFPOA, 5 May 45, sub: Observations During the Initial Phase of the Okinawa Operation, p. 2 (quotation), Encl 3 to Ltr, Willis to Kirk, 7 May 45, file 312.1 Kirk-Willis Correspondence (SWPA). Both in HUMEDS, RG 112, NARA. On 23 June, when the battle was almost over, the 80th Medical Group was established and the system organized further. See 71st Med Bn Quarterly Rpt (copy), Jul–Sep 45, p. 2, file 319.1, HUMEDS, RG 112, NARA.

[36]Comments of [Westervelt], 1 May 45, Encl to Ltr, Willis to Kirk, 8 May 45, file 312.1 Kirk-Willis Correspondence (SWPA), HUMEDS, RG 112, NARA.

[37]OofSurg, USAFPAC, ETMD, 28 Sep 45, THU Note Cards, Historians files; OofSurg, Tenth Army, ETMD, 20 Jul 45, p. 3, file 350.05; 31st Field Hosp AAR (copy), Okinawa, 1945, p. 3, file 319.1; Ltr (copy), Lt Col Harold A. Sofield to Col Leonard T. Peterson, 20 Jul 45,

Continued

Although overworked, the surgeons had some compensating advantages. Supporting the severely injured both in transit and in surgery was an abundant supply of whole blood. Naval Air Transport Service planes, equipped with special refrigeration units, flew blood from Los Angeles and San Francisco to Guam. Initially, ships carried it to Okinawa, but air service began on 18 April. As employed in the Philippines, a specially equipped LST received, stored, and disbursed the blood. Twice as much whole blood as plasma was used; whole blood replaced plasma in the management of shock and burns. Blood was given as far forward as collecting stations, and the officer in charge of the Army's blood program, Lt. Col. Douglas B. Kendrick, visited Okinawa during the battle to inspect field hospitals, to give lectures on the advantages of whole blood, and to assist on the shock wards. The hospitals alone utilized 14,000 pints of whole blood, and more than 40,000 were transfused in the course of the campaign.[38]

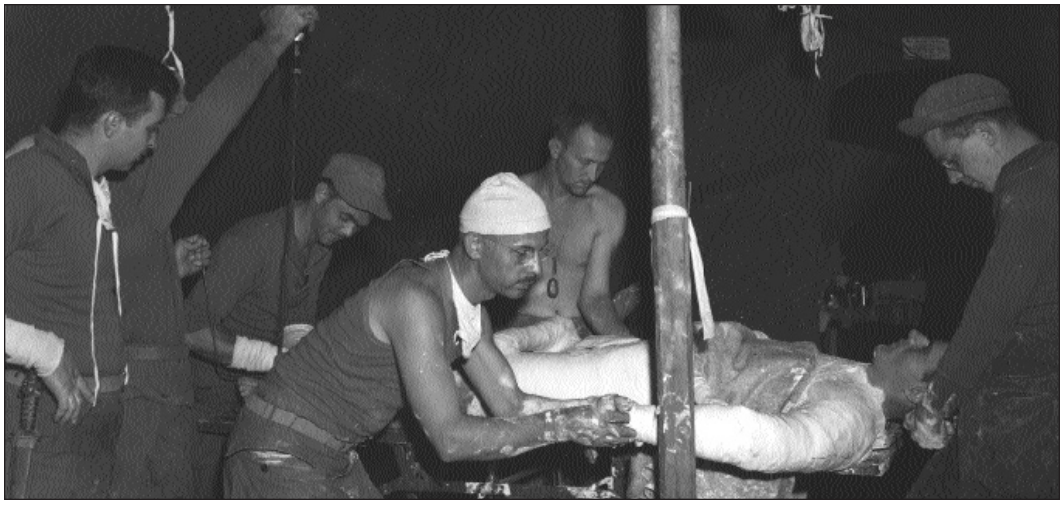
The casualty arriving at a field hospital entered a medical assembly line. He went first to the triage ward, where an experienced surgeon examined him, X-rays were made, and his priority for surgery was established. If he was in shock or in danger of shock—a potentially fatal condition caused by blood loss, with typical symptoms of cold, anxiety, and elevated pulse rate—he was sent to a special shock ward, where teams of internists went into action. Routine tests determined among other things the percentage of red cells in a given volume of blood, and hence the amount of blood lost. He then received plasma, intravenous glucose, and probably the amount of whole blood needed. When ready for surgery, he was taken to one of the tented operating rooms, with tarpaulin floors to minimize the intrusion of dust or mud.

Here steam from an autoclave provided warmth. Enlisted surgical technicians acted as scrub nurses and surgical assistants, and an enlisted technician administered a spinal anesthetic, open drop ether, or Pentothal under the supervision of a commissioned nurse anesthetist or anesthesiologist. Operations were carried out by general surgeons or by specialists, depending on the type of injury. The six hard-working orthopedists on Okinawa accomplished an exhausting task in dealing ably with some 15,000 injuries, many resulting from artillery. The presence of neurosurgeons on detached service from general hospitals made early treatment of brain and spinal cord injuries possible, almost from the first day of severe fighting.[39]

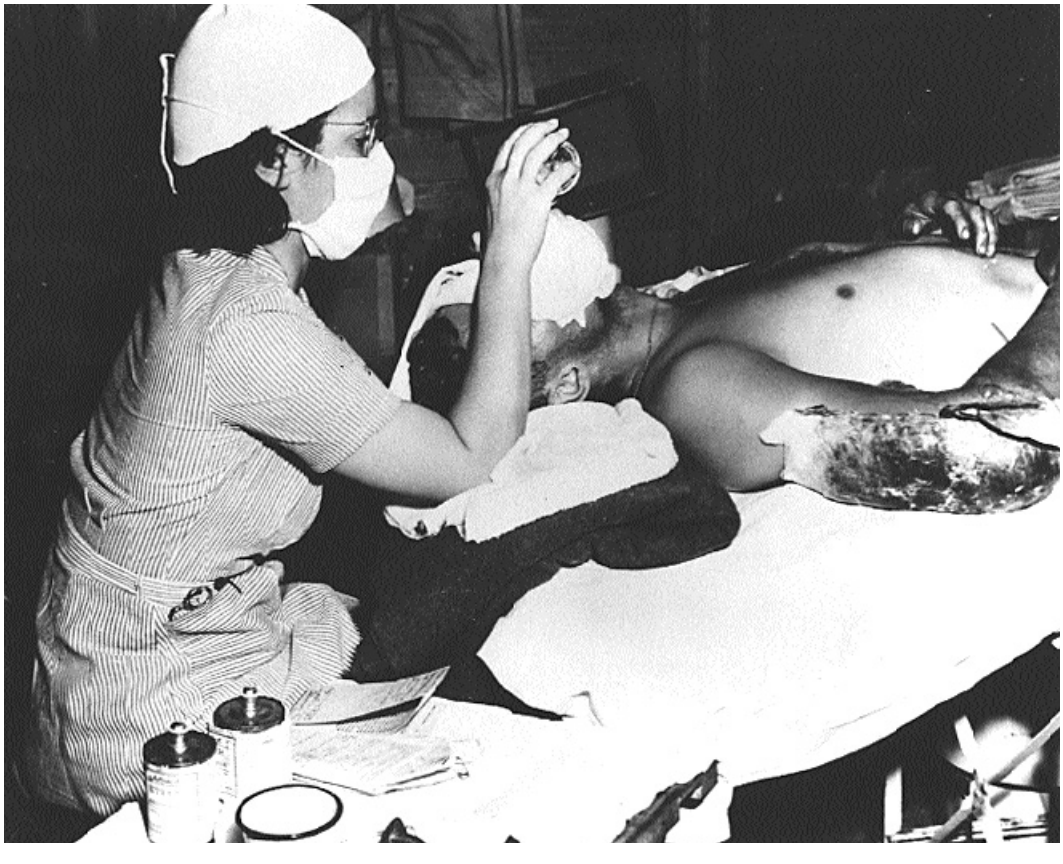
sub: Orthopedic Surgery on Okinawa, Historians files; Surg, XXIV Corps, Daily Journal (copy), 21 Apr 45, file 319.1. All in HUMEDS, RG 112, NARA. It should be noted that Colonel Potter remained a strong supporter of the role of the portables, writing that "the value of the Portable Surgical Hospitals cannot be over-emphasized especially in the administering of definitive treatment to severe non-transportable battle casualties." See Rpt, Surg, XXIV Corps, n.d., sub: Iceberg Operation, p. 17, file 319.1–2, HUMEDS, RG 112, NARA.

[38]OofSurg, USAFPAC, ETMD, 28 Sep 45, THU Note Cards, Historians files; Whitehill, "Medical Activities in Middle Pacific," block 18f, 1:148–50, file 314.7. Both in HUMEDS, RG 112, NARA. See also Interv, Mary Ellen Condon-Rall with Douglas B. Kendrick, 7 Oct 80, CMH; Douglas B. Kendrick, "The Blood Program," in B. Noland Carter, ed., *Activities of Surgical Consultants*, Medical Department, United States Army in World War II, 2 vols. (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1962–64), 1:160–61.

[39]31st Field Hosp AAR (copy), Okinawa, 1945, pp. 9–10, 23–31, file 319.1; Ltr (copy), Sofield to Peterson, 20 Jul 45, Historians files. Both in HUMEDS, RG 112, NARA. Full use of air evacuation and the establishment of a separate neurosurgical chain of evacuation to speed movement and minimize injury in transit, however, were not attained until the Korean war.



Administering Whole Blood and Ether *in tented operating rooms*



In sum, Army hospitalization on Okinawa provided a qualitatively excellent surgical service, equipped, however, with too few beds and too few specialists for a campaign that was longer and bloodier than planners had foreseen. A surgical conference held in the Marianas in July 1945 brought general agreement that Okinawa casualties arriving at the general hospitals there were in the best condition of any so far received from the Pacific battlegrounds. But consultants' reports indicated that ample room for improvement existed in a theater where Army medical support, by comparison with Europe and even with the Southwest Pacific Area, still lacked a fully developed chain of evacuation. As reported by the surgeon general in September: "The heavy load of [battle] casualties and of psychiatric patients demonstrated again the inadequacy of field hospitals used as the exclusive hospital support for combat divisions." Although he concluded that excellent evacuation took up much of the slack, he did not add the obvious corollary—that too many casualties were removed from the battle zone and lost to their hard-pressed units.[40]

Stress and Disease

Less successful, though fortunately less needed, was the medical service provided to sick soldiers. "Of ten field hospitals observed in this operation," wrote the Tenth Army medical consultant, "the medical service was good to very good in three, fair in one, and poor in six." Laboratory work, he added, was poorly done, and tonnage limitations prevented the 14th Medical Laboratory from functioning at its full potential. Transport difficulties on Okinawa itself complicated the task of sending specimens to the laboratory. In view of the medical consultant's findings, it was fortunate that sickness was not a serious problem on Okinawa and that the psychiatric service was of high quality.[41]

Combat stress and related disorders showed the interacting effects of two developments. On one hand, psychiatric support had reached maturity; on the other, unremitting combat in a battle of attrition caused ever-increasing stress. Fighting an aggressive campaign against an entrenched but unpredictable foe was wearing in itself. The nature of the campaign was intensely frustrating, with little progress and bitter struggles over featureless ridges. Not surprisingly, many soldiers came to believe that they faced only an endless series of fights, with their chances of survival constantly diminishing.[42]

Heavy enemy shellfire contributed significantly to psychiatric breakdowns. A Sanitary Corps officer described the situation on Okinawa:

[40]ASF Monthly Progress Rpt, 30 Sep 45, pp. 8–9 (quotation), THU Note Cards, HUMEDS, RG 112, NARA. On average 5 percent of the battle injured who reached medical care died of their wounds—slightly above the wartime average of about 4 percent. It is unclear what contributed most to the result, deficient bed strength or improved evacuation.

[41]Surg, Tenth Army, ETMD, 29 Aug 45, p. 3, file 350.05, HUMEDS, RG 112, NARA. Col. Walter B. Martin attributed the poor situation in the field hospitals only to unsatisfactory personnel.

[42]Whitehill, "Medical Activities in Middle Pacific," block 18f, 1:182–86, file 314.7; XXIV Corps AAR, Okinawa, 1 Apr–30 Jun 45, pp. 78–79, THU Note Cards, Historians files. Both in HUMEDS, RG 112, NARA. See also Oscar B. Markey, "Tenth U.S. Army," in Albert J. Glass, ed., *Overseas Theaters*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1973), p. 643.

It is said that the Japanese artillery on Okinawa has been the heaviest and most accurate that we have encountered. This surprising and violent change in the Japanese tactics caused a remarkable reaction among the front line [sic] troops. Many psychoneurotic patients were brought in during the days of the heaviest Japanese shelling. Our troops, though veterans, had no way of personally combating this artillery. Having no choice but to get into a hole and "sweat it out," many developed severe anxiety and fear neuroses. These "battle fatigues" were brought to the aid stations trembling violently, glassy-eyed, crouched and flinching, and many were crying hysterically. Old, hardened soldiers broke up the same as new troops.[43]

About 1 in every 7 hospital admissions was for causes loosely termed psychiatric. Attached to the Tenth Army for the Okinawa operation was Col. M. Ralph Kaufman, MC, the USAFPAO neuropsychiatric consultant, who brought to bear the accumulated experience of past years in the South Pacific Area and the Pacific Ocean Areas. Active therapy at the earliest possible time and at the most forward possible echelon was Kaufman's aim. Those suffering only from exhaustion and mild anxiety received sedation and rest at aid stations and were returned to duty after twenty-four hours, while more serious cases went to a division clearing station to be seen by the division psychiatrist. Here treatment for most consisted of reassurance, rest, hot meals, sleep, and a change of clothes. However, as the clearing stations became overcrowded, the overflow went to the field hospitals, each of which had a psychiatrist on its staff and trained enlisted men in the neuropsychiatric wards. The number of casualties continued to grow so that on 25 April the 82d Field Hospital opened specifically to care for NPs, both soldiers and marines. Here the most difficult cases received more complex treatment, including group therapy and hypnosis.

Eventually, because psychiatrists from other hospitals were assigned to the 82d, it became the best staffed facility of its kind in the Pacific war. Deliberately operating closer to the front line than other field hospitals, the 82d embodied Kaufman's conviction that NPs must be held in the danger zone and continue to make their cots, to stand in chow lines, and to hear the "shells whiz over their heads" if they were to recover and return to duty. For the same reason, four rest camps—where soldiers recovering from combat fatigue finished their recuperation on duty status—were set up forward of the field hospitals, rather than to the rear. In some units the results were as good as any in World War II. The 77th Division, for example, reported that 76 percent of all neuropsychiatric cases returned to full duty and that less than 10 percent of those returned to combat failed to hold up under renewed stress.[44]

As a whole, however, the Tenth Army had less satisfactory results, for reasons that had nothing to do with the scheme of forward treatment in itself. More than half of the 3,118 Army and Marine neuropsychiatric cases had to be evacuated, many going untreated to the rear because the wounded had priority for

[43]Ltr, Bloodhart, thru CO, 18th Med Gen Lab, to CSurg, USAFPOA, 5 May 45, p. 3 (quotation), Encl 3 to Ltr, Willis to Kirk, 7 May 45, file 312.1 Kirk-Willis Correspondence (SWPA), HUMEDS, RG 112, NARA.

[44]Quotation from Markey, "Tenth U.S. Army," in Glass, ed., *Overseas Theaters*, p. 672. See also 77th Inf Div AAR, Okinawa, 25 Apr–30 Jun 45, p. 76, THU Note Cards, Historians files, HUMEDS, RG 112, NARA.

bed space on Okinawa. Progress since the early days of the war was plain to see. But so were continuing problems—the lack of forward beds, the long supply lines, and the relative poverty of the Pacific theaters.[45]

No serious disease outbreaks afflicted the troops during the campaign. The inevitable cases of diarrhea, skin disease, and respiratory complaints, if mild, were handled adequately in individual units, with the sick soldiers remaining on duty status. Elaborate pre-invasion preparations to meet malaria, schistosomiasis, scrub typhus, and even poisonous snakes revealed the inadequacy of the medical intelligence on islands long held by the Japanese. (Local doctors who had lived on Okinawa all their lives told American medical officers that they had never seen scrub typhus.) Yet one serious disease—filariasis, infection with a parasitic nematode—was common. The organism was spread by mosquitoes, and the discovery led to greater control efforts, using DDT sprayed from airplanes. Fortunately, an overestimate of the malaria menace had resulted in plenty of equipment and supplies.

The change from a tropical to a mild subtropical climate in itself appeared to make a major difference in the extent and severity of common illnesses. Skin diseases were far less troubling. An outbreak of dengue occurred on the southeast coast, but never grew into an epidemic. Most cases of malaria probably originated on Leyte, from where the 7th Division had come, as did the few cases of infectious hepatitis and even the worm infestations that turned up in 416 troops. Fly control was the business of sanitary units operating immediately behind the front, which sprayed enemy dead with arsenite and DDT and buried them with bulldozers. Only toward the end of the campaign did diarrheal disease begin an upward spiral, especially in forward areas—a function of the destruction of war and the accumulation of unburied dead. (According to some grim accounts, corpses of Japanese infiltrators, blanketed with flies, were lying a few feet from the foxholes of GIs who could not leave their shelter to bury them.) Airplane spraying provided only limited control, and diarrheal disease rates rose to 200–300 per 1,000 troops per year in June—higher than those of the Sixth Army on Luzon. The command was fortunate that the diarrheal diseases, though common, were not very severe; the causes of most cases, for lack of proper laboratory facilities, were never definitely identified.[46]

Despite exceptions, the story of preventive medicine on Okinawa was remarkable for the Pacific war. In almost any operation the sick will outnumber the wounded. On Okinawa, however, daily casualties from sickness did not outnumber battle casualties until 28 May, fifty-eight days after the

[45]Markey, "Tenth U.S. Army," in Glass, ed., *Overseas Theaters*, pp. 639–78.

[46]ASF Monthly Progress Rpt, 30 Sep 45, sec. 7, pp. 5–6, THU Note Cards, HUMEDS, RG 112, NARA. After Okinawa was secured, an outbreak of Japanese B encephalitis among civilians alarmed the armed forces staging for the invasion of Japan. Ultimately, 38 possible cases and 2 deaths were recorded for U.S. personnel. See Albert B. Sabin, "Epidemic Encephalitis in Military Personnel: Isolation of Japanese B Virus on Okinawa in 1945; Serologic Diagnosis, Clinical Manifestations, Epidemiologic Aspects and Use of Mouse Brain Vaccine," *Journal of the American Medical Association* 133 (Feb 47): 281–93, and W. D. Tigertt and W. M. Hammon, "Japanese B Encephalitis: A Complete Review of Experience on Okinawa, 1945–1949," *American Journal of Tropical Medicine* 30 (Sep 50): 689–722.



MALARIA CONTROL EFFORTS ON OKINAWA

invasion began. Throughout the campaign, noneffective rates from disease remained low and total nonbattle casualties, both sick and injured, numbered only two-thirds of those killed, wounded, and missing in action. In no other respect did the last battle of the Pacific war so completely depart from past norms.

Evacuation

Evacuation of all casualties was difficult along the fighting line but fundamentally well-organized and efficient further to the rear. As the battles against the Shuri lines and the southern redoubt progressed, the contrast grew. The onset of torrential rains soon compounded the work of division medics. The valleys became bogs, and tanks had to be employed as evacuation vehicles, dragging out ambulances and jeep ambulances that were hopelessly stuck. Sometimes tank crews came to the aid of casualties pinned down by enemy fire, straddling the victim and pulling him to safety through the escape hatch. At other times tanks, moving at low speed, ran interference for litter teams that were unable to reach the wounded. Weapons carriers (¾-ton trucks), tractors, and Weasels likewise served as ambulances.

Yet, despite such mechanical assistance, human muscle remained the best reliance for moving casualties over the harsh terrain, with its steep slopes, ravines, escarpments, and coral boulders. To move under fire in such country, carrying an inert body, was brutal labor. Extra litter-bearers had to be requested, and loading posts were established beside battalion aid stations wherever vehicles could run. Even at the field hospital, the problem continued. At the 31st, for example, mud was so deep for a time that litter-bearers could not carry casualties between wards, and ambulances made such transfers, churning through the "lake of mud" in which the hospital worked.[47]

When roads were impassible, both Army and Marine units attempted to evacuate by water or by cub plane. Thus, a 7th Division clearing station evacuated casualties to a coastal collecting point, from where they were taken by landing craft up the east coast to a collecting platoon at Kuba and then on to the 74th Field Hospital—a very similar arrangement to the one the same division had used on Leyte's west coast in the autumn of 1944. Light planes again, as in the Philippines, became an essential part of the evacuation team. From mid-June on, when the small craft arrived on Okinawa, cubs landed and took off from hard-surfaced roads near collecting stations, returning the evacuees to division and corps hospitals.

Despite the few casualties that could be taken per flight, short distances and the persistence of pilots flying shuttle



TANK USED FOR FRONTLINE EVACUATION

permitted multiple trips. The 1st Marine Division evacuated about 800 wounded in this way, and the 7th and 96th Divisions together moved out 1,232. Light planes enabled some to receive hospital care within an hour or two of being wounded, and the terrain, especially as the weather began to clear, almost demanded forward air evacuation.[48]

Of the 21,000 casualties evacuated from Okinawa, about 16,000 went by ship, which maintained blackout conditions after the first incidents of enemy

[47]31st Field Hosp AAR (copy), Okinawa, 1945, p. 5 (quoted words), file 319.1; Whitehill, "Medical Activities in Middle Pacific," block 18f, 1:151–54, file 314.7. Both in HUMEDS, RG 112, NARA.

[48]Whitehill, "Medical Activities in Middle Pacific," block 18f, 1:157–58, file 314.7, HUMEDS, RG 112, NARA; Bennett F. Avery, ed., *The History of the Medical Department of the United States Navy in World War II*, 3 vols. (Washington, D.C.: Bureau of Medicine and Surgery, Department of the Navy, 1950–53), 1:112.



FLIGHT NURSE ACCOMPANYING OKINAWAN CASUALTIES

attack. With several large airfields under Allied control, however, the growth of air evacuation was inevitable. The Navy had evacuation hospitals, unlike the Army, and casualties were transferred from the XXIV Corps holding stations or the Navy hospitals to the airfields, where the 645th Collecting Company unloaded the ambulances and loaded the C–54s and DC–4s of the Naval Air Transport Service and the Air Transport Command's Pacific Division. Flight nurses and enlisted technicians accompanied the wounded, and by 25 April the outflow had reached 200 a day. In all, 13,387 soldiers were evacuated from Okinawa, and of these more than 7,500 went by air, apparently the greatest proportion for any of Admiral Nimitz' campaigns.[49]

Victims of War

The campaign in the Ryukyus was the first in which Americans took large numbers of enemy prisoners and, except for Saipan, the first in which they encountered a heavy population of Japanese civilians. On Okinawa the latter proved to be no great problem behind the lines, if only because the Japanese Army had conscripted most of the males between the ages of fifteen and forty-five; those most likely to cause trouble were serving with General Ushijima and could be dealt with as combatants. However, the treatment of the civilians was important not only in the context of the war but in view of the greater problem that lay just ahead—the management by military commanders of the civil population of Japan.

Hence, preparations were exceptionally thorough. Though ultimate responsibility for military government rested upon Admiral Nimitz, the fact that the Army would garrison the islands caused him to delegate his power to General Buckner, who in turn passed it to General Wallace. Each Tenth Army division had brought with it 70,000 civilian rations of rice, soybeans, and canned fish, and medical supplies as well. Special rations had even been prepared for small children, nursing mothers, and laborers. Military government specialists, supplied by both armed services, followed the assault waves. The Navy

[49]Whitehill, "Medical Activities in Middle Pacific," block 18f, 1:162–63, file 314.7, HUMEDS, RG 112, NARA; Avery, ed., *Medical Department of United States Navy*, 1:110–13; Appleman et al., *Okinawa*, pp. 412–15.

provided two types of medical detachments to serve civilian needs—a 24-bed dispensary with 1 medical officer and 6 corpsmen, and a 500-bed hospital with 15 medical officers and 150 enlisted men. In all, roughly 1,000 naval medical personnel were committed to the effort.[50]

The number of those who required aid was great and rose rapidly as the conquest proceeded. By the end of April about 127,000 civilians had passed to American control. The increase was more gradual during May, because of the stalemate before Shuri; but, after the breakthrough, numbers again rose rapidly. By the beginning of June 144,311 men, women, and children were under military government control. Of the civil population at the start of the battle—probably over 400,000 people—between a tenth and a fourth perished in the fighting, and wounds among the survivors were serious and common. In July a single dispensary recorded 5,000 outpatient and 731 inpatient treatments. One of the hospitals, after the breaking of the Shuri line, had a peak census of 1,180 cases, more than double its table-of-organization strength.[51]

Initially collected in barbed-wire stockades to keep them out of the way, Okinawans were quickly moved to camps established around villages that had escaped destruction, where they received food, water, clothing, shelter, and medical care. An energetic public health campaign began. Many civilians first encountered their conquerors in the form of enlisted medics, who dusted them with DDT to kill any lice and fleas.

With such assistance, the Okinawans quickly proved to be a hardy lot. Largely an agricultural people, they were industrious at growing and harvesting crops, and the Army cooperated by helping to round up domestic animals that were running wild behind the lines and turning them over to the camps to provide a more adequate diet. Poverty and hard work, frugality and discipline had keynoted the Okinawans' lives during peacetime; to survive the battle, they adapted docilely to events and sought to make "the best of the disaster which had overtaken them."[52]

On the whole, the Okinawans were comparatively healthy as well as hardy. Inhabitants of a civilized and temperate if poor and backward land, they suffered little from communicable disease, although cases of malaria, encephalitis, leprosy, intestinal disorders, and filariasis were noted. Tuberculosis was a major scourge in Asia, and about a quarter of the civilians tested showed some evidence of the disease. Army hospitals provided some assistance, on occasion detailing medical personnel to civilian hospitals. The overwhelming burden of civilian care and treatment, however, was borne primarily by the Navy medical detachments of the military government. After the battle, any cases that could not be treated by civilian doctors or by military government medics were sent to Navy hospitals and dispensaries.

[50]"Disaster Relief Administration: Public Health," pp. 1–6, Historians files, HUMEDS, RG 112, NARA.

[51]Ibid., p. 5, Historians files, HUMEDS, RG 112, NARA; Arnold G. Fisch, Jr., *Military Government in the Ryukyu Islands, 1945–1950* (Washington, D.C.: U.S. Army Center of Military History, 1988), pp. 42, 45.

[52]Quotation from Appleman et al., *Okinawa*, p. 415. See also ASF Monthly Progress Rpt, 30 Sep 45, sec. 7, p. 10, THU Note Cards, Historians files, HUMEDS, RG 112, NARA. The subsequent course of events on Okinawa is detailed in Fisch, *Military Government in Ryukyu Islands.*

The effort to treat civilians and provide the basics of public health appears to have been one of the success stories of the Okinawa campaign. The mere fact that humanity should have been shown at all astonished those who came trembling into American lines, in expectation of torture and death. The provision of food and its transportation over long distances, when space was at a premium, marked the depth of the commitment by Nimitz' headquarters to a wise and successful policy.[53]

The full weight of responsibility for caring for Japanese prisoners of war fell upon the Army. During most of the campaign, in line with past experience, few enemy soldiers surrendered; many of those who did were unconscious or otherwise helpless. Suicide remained common. Some Japanese soldiers would fire a last shot and then wait in plain view to be killed, while others would hold grenades against their bellies and pull the pins. But at the end of the fighting 7,401 preferred surrender to death—though 3,339 of those who gave themselves up were laborers, rather than fighters.

Hard used during the terrible campaign, most Japanese prisoners were in poor condition from the effects of starvation and stress. Many were wounded as well. They entered Army hospitals in a state of acute anxiety that reflected the atrocity stories spread by anti-American propaganda. The 96th Medical Battalion's holding station was the first unit to receive them, and the 88th Field Hospital was later dedicated to their care. They received nourishment, beds, and care similar to that given American soldiers, except in three particulars: they were not given American blood, plasma, or penicillin. At the end of the fighting Army hospitals on Okinawa held 1,065 Japanese prisoners—"an unprecedented number for the Pacific," as the surgeon general reported. They responded well to food and medical treatment and answered questions freely. Those who were ambulatory carried litters and water if able, as well as assisted in the care of bed patients.[54]

Reviewing the Campaign

The joint headquarters that planned medical support and the officers who directed it in the field had cause for satisfaction in the record of Okinawa. As ever, courage and endurance at the line were the foundations of success. But sound planning had incorporated the hard-learned lessons of past operations, giving the troops some advantage. Better intelligence, more surgical teams, more abundant and earlier use of light planes, and the presence of a few helicopters could have improved the situation further, as could an Army evacuation hospital, had one been available. But in surgery, bed strength, and evacuation, the three essentials for such a campaign, the theater achieved an impressive record under difficult conditions.

As a whole, the Tenth Army sustained 65,631 casualties, about 2,000 more than on Luzon, and roughly 1 in 9 died. Its four divisions suffered 34,736 casual-

[53]Appleman et al., *Okinawa*, pp. 415–19; ASF Monthly Progress Rpt, 30 Sep 45, sec. 7, p. 10, THU Note Cards, Historians files, HUMEDS, RG 112, NARA.

[54]ASF Monthly Progress Rpt, 30 Sep 45, p. 9 (quotation), THU Note Cards, Historians files; Whitehill, "Medical Activities in Middle Pacific," block 18f, 1:135, file 314.7. Both in HUMEDS, RG 112, NARA. See also Appleman et al., *Okinawa*, pp. 465–67.

ties, of whom 4,582 were killed or died of wounds. The marines lost 2,792 dead, while the Navy, reflecting the bitterness of the struggle at sea, lost 4,907 dead, although many fewer wounded than the land forces. The intensity of the Ryukyus fighting is less easy to measure. In killed and wounded per 1,000 troops per day, only Iwo Jima was higher than Okinawa; in Europe, the battle of Normandy was approximately equal.

Beginning as a series of savage episodes, the campaigns in the Pacific ended in a large-unit struggle for the Ryukyus, in which 12,281 Americans and 110,000 Japanese died. Total American casualties, including wounded and nonbattle injuries, were in excess of 75,000. Roughly speaking, 2 Americans either died or went to the hospital for every 3 Japanese who were killed, surrendered, or committed suicide. These figures were grim reading for the American planners, who already had begun to look ahead to the invasion of Japan.[55]

[55]For statistics and analysis, see Appleman et al., *Okinawa*, pp. 489–90; ASF Monthly Progress Rpt, 30 Sep 45, sec. 7, pp. 2–5, THU Note Cards, Historians files, HUMEDS, RG 112, NARA.

CHAPTER XIII

The Last Act

Even as Admiral Nimitz' forces on Okinawa moved inland in early April 1945, the Joint Chiefs of Staff prepared for the final phase of the Pacific war. Shortly after the establishment of a new headquarters, called the United States Army Forces, Pacific (USAFPAC), under the command of General MacArthur, they ordered him to develop plans for the invasion and occupation of Japan. When the Okinawa campaign ended in July, USAFPOA soldiers were likewise assigned to MacArthur's USAFPAC headquarters, while Admiral Nimitz became commander of all naval forces in the Pacific. The time of geographic commands dividing the Pacific was over; but, as before, no single supreme commander controlled all Allied, or even all American, forces in the region.

Organizational Problems

General Denit became the USAFPAC chief surgeon on 9 June, when personnel were assigned to the new headquarters. As a planning and policy-making unit for a vastly increased consolidated command, Denit's office expanded, though the usual administrative lag caused the arrival of new personnel to be delayed beyond the end of the war. As chief surgeon, Denit's mission was to exercise general technical supervision over the medical service of the Pacific theater, to advise MacArthur, and to translate his commander's decisions into plans.

Denit found that his new position had strengths and weaknesses. Previously, he functioned as both the USAFFE and the USASOS chief surgeon. Under the new setup in which the logistical command was renamed the United States Army Forces, Western Pacific (USAFWESPAC), Denit continued as the USAFWESPAC chief surgeon only until 19 August, when the Fifth Army surgeon, Brig. Gen. Joseph I. Martin, MC, was appointed to the post. Meanwhile, the Army logistical system that had supported the USAFPOA became the United States Army Forces, Middle Pacific (USAFMIDPAC), the headquarters remaining in the Hawaiian Islands.

With this geographic division between the service commands, the USAFWESPAC became responsible for the logistical support of the western Pacific region, including Okinawa, and of the planned invasion of Japan. Denit faced the complex tasks of managing the elaborate medical supply, evacuation, and hospitalization systems that now stretched across the vast distances of the western Pacific, including the

older base sections of Australia, New Guinea, and the South Pacific, as well as the newer ones of the Philippines. The rapid decrease of troops in New Guinea as the forces shifted forward brought a decision to close some bases there and, on 31 July, to dissolve the local logistical commands, placing those bases that remained under the USAFWESPAC's direct control.[1]

Even as the USAFWESPAC prepared for its supreme test, it remained in a sense the captive of its own history. Geography had early dictated that decentralization should be the rule in the Pacific commands, and the Southwest Pacific had been no exception to the rule. As the explicit policy of General Headquarters, SWPA, and of USAFFE, decentralization had come to mean virtual autonomy among the many subordinate commands, all of which seemed to exist more or less on the same level. USAFFE's eight major commands appeared to resent as unwarranted interference attempts from higher headquarters to shift resources or personnel from one to another or, as Denit had discovered, to impose technical supervision. His own position as both the USAFFE and the USASOS chief surgeon had been absolutely necessary to overcome the infighting of earlier years, yet by some accounts had contributed to a new kind of particularism: Because he was identified with the USASOS, other commands accused him of favoritism.

The major problem, however, was that of getting things done in a bureaucratic system that depended upon consensus far more than is customary in a military organization. A mere proposal to move a medical officer, according to Denit, launched a round of conferences and requests for concurrence, which in the end usually brought a refusal from the local commander who viewed the officer in question as part of his official "family"—or even as his personal property. The continuing shortages of key people, both officer and enlisted, often served to justify resistance to demands from above. But the resulting problems were many. For example, the work of consultants in evaluating the ability of medical officers and the needs of particular units was often nullified or suffered endless delays. "It became," Denit complained, "almost a policy to avoid any action which might remotely be construed as interference with lower command activities."[2]

The chief surgeon was not all-powerful, and he acknowledged that he could neither reorganize the command nor separate the medical system from the rest in a "theater having such strong traditions of independent action." Yet there could be no question that Denit's position had been greatly improved by the creation of the USAFPAC. Only those who had suffered through the confusion that had reigned in the past could fully appreciate the advantages of

[1]CSurg, USAFWESPAC, Annual Rpt, 1945, pt. 2, pp. 168, 270; CSurg, USAFPAC, Semiannual Rpt, Jun–Dec 45, pp. 4–5. Both file 319.1–2, Historical Unit Medical Detachment (HUMEDS), Record Group (RG) 112, National Archives and Records Administration (NARA), Washington, D.C. Briefly during 1945 the three major areas under General Headquarters, SWPA, and USAFPAC control had unified logistical commands: the Philippines Base Section, the New Guinea Base Section, and the Australia Base Section. Subcommands were called bases, with letter designations—for example, Base X (Manila) and Base M (San Fernando).

[2]CSurg, USAFPAC, Semiannual Rpt, Jun–Dec 45, pp. 15–19 (quotations), file 319.1–2, HUMEDS, RG 112, NARA.

having a single capable hand at last on the tiller.[3]

USAFPAC Planning

As the initial step in the final Pacific campaign, code-named DOWNFALL, MacArthur's staff prepared Operation OLYMPIC, an assault by the Sixth Army on southern Kyushu starting 1 November 1945. A second plan foreshadowed an invasion of the main Japanese island, Honshu, by the Eighth and Tenth Armies from the Pacific and by the First Army from Europe. But this operation, code-named CORONET, remained little more than a general concept. Knowing nothing of the atomic bomb then being readied for use, MacArthur's staff devoted only limited effort to planning for the peaceful occupation of Japan, in the event of a surrender. Work on such a contingency plan started in May, under the name BLACKLIST, but was still incomplete when the war ended.

OLYMPIC was a natural successor to the earlier campaigns of the Pacific war, for it contemplated using amphibious tactics and large-unit operations ashore to seize an enemy-held island, which in turn would serve as an advanced air base and staging area for the later invasion of Honshu. The medical contribution included, as usual, casualty estimates and plans for support of the fighting forces and for the evacuation and treatment of the wounded. The task was familiar, but its scale dwarfed the invasions of the past.[4]

Denit's planners developed the medical plans to support the three operations, giving heavy emphasis to OLYMPIC. They worked within the general assumptions of MacArthur's staff, namely, that the Japanese would employ 260,000–300,000 troops to defend Kyushu; that their first line of defense would be special suicide units, air and sea; and that they would return to their earlier practice in the war of defending the landing beaches. Hence, to secure an anchorage, the Americans, as at Okinawa, would first attack offshore islands before landing by corps on the eastern and western sides of Kyushu. Involved were the I and XI Corps and the V Amphibious Corps.[5]

Medical support for the invasion would benefit by the experience of more than three years of war. Although the proportion of medics to troop strength continued to decline and the Eighth Army was short of both doctors and nurses, the medical endowment for the Sixth Army would be even more ample than in the past. Each division would have not only its organic units, including its medical battalion, but also an attached separate clearing company, a medical company from an engineer

[3]Ibid., p. 20, file 319.1–2, HUMEDS, RG 112, NARA.

[4]Department of the Army, *Reports of General MacArthur*, 4 vols. (1950; reprint ed., Washington, D.C.: Government Printing Office, 1966), 1:27, 67–89; Walter Krueger, *From Down Under to Nippon: The Story of the Sixth Army in World War II* (Washington, D.C.: Combat Forces Press, 1953), pp. 333–40; John Ray Skates, *The Invasion of Japan: Alternative to the Bomb* (Columbia, S.C.: University of South Carolina Press, 1994), pp. 1–7. The actual decision to invade was made by President Harry S Truman on 18 June. See Louis Morton, "The Decision To Use the Atomic Bomb," in Kent Roberts Greenfield, ed., *Command Decisions* (Washington, D.C.: Office of the Chief of Military History, United States Army, 1960), pp. 500–01.

[5]Olympic Opn Log Instrs no. 1, OofCG, USAFWESPAC, 16 Jul 45, in "History of Planning Division, ASF," 11:1, Ms 3–2.2 AA 11, files of U.S. Army Center of Military History (CMH), Washington, D.C.; Warren W. Daboll, "From OLYMPIC to BLACKLIST," ch. 15 of "Medical Service in the Asiatic-Pacific Theater," pp. 5–6, Historians files, HUMEDS, RG 112, NARA.

special brigade, two portable surgical hospitals, and an evacuation hospital. In addition, each corps would have five field hospitals, plus an ambulance company, a medical supply company, malaria survey and control detachments, and a veterinary food inspection detachment. The Sixth Army was to have two medical groups to organize evacuation, plus an array of special units, including a medical laboratory. The commander of the Far East Air Forces, created in June 1944 as the higher headquarters for the Thirteenth and Fifth Air Forces, allocated three squadrons of L–5s to evacuate casualties from the forward areas—a clear indication that the lessons of air evacuation taught by Luzon and Okinawa had been learned.[6]

The chief surgeon, with the objective of controlling the movement of casualties from the time they left the beaches until they arrived in the rear-area hospitals, assigned Lt. Col. Paul Taylor, MC, in April 1945 to be the USAFPAC medical regulating officer. As usual, the first stop would be the eighteen hospital LSTs offshore, where the wounded would be received, treated, sorted, and transferred to other vessels. Naval assault craft would evacuate the wounded to Okinawa, where marines would be dispatched by air or by hospital ship to the Marianas and, if necessary, to Oahu and the United States. The well-equipped naval assault transports would sail directly to the Marianas or the Philippines. Army casualties would be sent by air or hospital ship to the treatment centers in the Philippines. In either case, those whose condition required them to leave the theater would travel to the United States by returning transports or by the C–54s and C–87s of the Air Transport Command's Pacific Division. In June the USAFPAC authorized 62,250 hospital beds for the Philippines and Okinawa, some 37,000 of which were to be on Luzon alone, with more than 22,000 in Manila.

As soon as possible, airfields to be built on Kyushu would be exploited to provide direct air transport to Okinawa and beyond. An array of new hospitals would then be built on Kyushu, with capacity almost as great as the whole medical establishment supporting OLYMPIC. The USAFWESPAC was assigned the responsibility for establishing 33,250 fixed beds on Kyushu, including 13,250 at Kagoshima, 15,500 at Shibushi, and 4,500 at Miyazaki. This would permit a gradually increasing evacuation policy, as Japan's southernmost island—like Australia, New Guinea, the Philippines, and Okinawa before it—became a base for operations beyond. It would also prepare the way for the climactic blood-letting of CORONET.[7]

The precise calculation of casualties upon which this extraordinary medical establishment was predicated is not easy to deduce from the records. Probably

[6]An 4 (Medical) to Log Instrs no. 1, 16 Jul 45, in "History of Planning Division, ASF," 11:1–6, Ms 3–2.2 AA 11, CMH; Daboll, "From OLYMPIC to BLACKLIST," pp. 10–11, Historians files, HUMEDS, RG 112, NARA; John H. McMinn and Max Levin, *Personnel in World War II*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963), pp. 108, 368–70.

[7]Daboll, "From OLYMPIC to BLACKLIST," pp. 14–15, 23.1, Historians files; CSurg, USAFWESPAC, Annual Rpt, 1945, pt. 2, pp. 222–23, 227, file 319.1–2. Both in HUMEDS, RG 112, NARA. See also App B (Major Hospitalization Areas) and App C (Hospital Facilities—Tentative) of An 4 (Medical) to Log Instrs no. 1, 16 Jul 45, in "History of Planning Division, ASF," 11:1 and 11:1–2, and An 5 (Engineer) to ibid., in ibid., 11:15, 24, 30, Ms 3–2.2 AA 11, CMH; Crawford F. Sams, "Medic," 1:331, 335, CMH Library (L).

basic to the confusion is the fact that debate continued in the highest circles of the Truman administration over the advantages of an invasion, rather than a blockade and bombardment, as the means to induce Japan to surrender. General MacArthur evidently saw high casualty projections as likely to influence this debate in a direction he did not desire. On 18 June his headquarters reported to the War Department that battle casualties—with no breakdown as to dead and wounded—would number 50,800 for D-day to D+30, 27,150 for D+30 to D+60, and 27,100 for D+60 to D+90, with an additional 4,200 nonbattle casualties per month. These figures appear to give a total of 117,650 for the first 90 days.

However, MacArthur followed with a message stating that the reported USAFPAC figures were "purely academic," that he had never seen them before, and that he did "not anticipate such a high rate of loss." He asserted that the estimates were based upon Normandy and Okinawa, implying that they represented an upper limit of possibility. In seeking the president's reconfirmation of his decision in favor of OLYMPIC, General Marshall was even vaguer; he mentioned no numbers at all. "Marshall and his colleagues," as a later Army study revealed, "were not willing to estimate the number of casualties to be expected from an invasion of Kyushu, but they presented many reasons for their belief that they would be acceptable."[8]

The figures later reported by Medical Department historians differed sharply from those of MacArthur. By their account the basis for calculating probable casualties in Operation OLYMPIC was neither Normandy nor Okinawa but rather Luzon, which resembled Kyushu in topography. Their breakdown of figures was far more precise. Besides nonbattle injuries, the chief surgeon anticipated that the invaders would face a number of serious disease threats, including dysentery, scrub typhus, and Japanese B encephalitis. Denit forecasted in the first 60 days after the landing a total of 176,663 casualties, including 55,906 battle casualties, and in the first 120 days a total of 394,859, including 125,935 battle casualties. In all, about 119,000 would require evacuation from Kyushu, some 44,000 ultimately needing transport to the United States.[9]

[8]Statistics from MFR, A.J.G. [Lt Col Andrew J. Goodpaster, Opns Div, WDGS], 18 Jun 45, and first two quotations from Msg, MacArthur to Marshall, 18 Jun 45, file OPD 704, box 178, Entry 419, RG 165, NARA. Remaining quotations from Henry G. Morgan, Jr., "Planning the Defeat of Japan: A Study of Total War Strategy," p. 167, Ms 2–3.7 AB.J, CMH.

[9]Daboll, "From OLYMPIC to BLACKLIST," pp. 14, 18, Historians files, HUMEDS, RG 112, NARA. This document is marked "Gen Denit," and appears to contain Denit's marginalia, including a check on the casualty figures. Estimates of 500,000 or more were cited at the time by Secretary of War Henry L. Stimson, who was attempting to modify the unconditional surrender doctrine, and after the war by President Truman and others, who were attempting to justify the use of the atomic bombs. Such estimates presumably related to losses anticipated for both OLYMPIC and CORONET. Some scholars have cited much lower figures—for example, Rufus E. Miles, Jr., "Hiroshima: The Strange Myth of Half a Million American Lives Saved," *International Security* 10 (Fall 85): 121–40. However, many of the numbers cited by Miles are estimates of battle casualties only; as USAFPAC figures indicated, disease and nonbattle injury would have expanded the toll over the anticipated four months of fighting to almost 400,000 American casualties. These, of course, were only the projected losses for OLYMPIC; more severe fighting accompanied by even heavier losses would have followed in CORONET, as the final battles were fought in one of the most heavily settled parts of Japan. If a fifth of American battle casualties in OLYMPIC died—not an unreasonable assumption—and if, as in the past, 22 Japanese died on average for 1 American, the sum total of all deaths, Japanese and American, for the invasion of Kyushu alone would have been 579,301.

Strengthening the medical system to handle such numbers was no easy task. Despite the end of the fighting in Europe, the process of moving troops to the Pacific was cumbersome, and support troops as usual lagged behind the combat forces. Denit's office calculated the needs of the theater for the forthcoming operations on the basis of 4.8 beds per 1,000 troops and 32 medical officers per 1,000 beds. Initial assignment of medical officers remained the chief surgeon's prerogative, but his difficulties in reassigning his own people were not eased by the slow influx of medical officers from Europe.

In turn, the USAFPAC's preoccupation with officers precluded securing qualified enlisted, probably contributing to a constant loss of trained enlisted personnel, including a virtual hemorrhage through the Replacement Command. Depots redistributed enlisted personnel on the basis of requisitions received, rather than expertise or prior training. If no medical MOS requisitions were pending when trained medics arrived, the latter were simply reclassified and sent out to serve as riflemen—or whatever else was currently desired. Not only were trained medics lost in the process, but infantrymen and soldiers trained in other specialties showed up at medical units to fill losses there, learning whatever they could through on-the-job training or classes conducted by the units themselves.[10]

Despite personnel problems, the chief surgeon looked forward to a new influx of medics following the end of the war in Europe. The First Army headquarters was committed to the Pacific, to build up a new field army for CORONET, and thousands of medical personnel had been earmarked for transfer to the Pacific. Surgeon General Kirk promised Denit officers from Europe to assist in educating 1.5 million troops about cold injury—an important consideration, as the war front moved out of the tropics in summertime into temperate Japan in the autumn. Even more important, in view of the high casualties anticipated, was the growing sophistication of the blood supply program and its orientation toward the Pacific fighting.

Through much of the fighting whole blood had to be obtained locally, by hospitals bleeding their staffs, by support troops answering emergency appeals, and by line units contributing blood in cantonments for their own later use in combat. Australian civilians gave generously, but long Pacific distances and transport delays had made their blood less and less useful as the Allies pressed north. Not until late in 1944 had forward centers been established, at Hollandia and on Guam. Then, in October the surgeons general of the Army and the Navy invited the American Red Cross to join in establishing an airlift of blood from the United States. The Red Cross quickly agreed to participate and the airlift began late in 1944, with blood supplied by centers in San Franciso, Oakland, and Los Angeles. By mid-1945, with Germany out of the war, East Coast centers joined the Pacific airlift, and soon 12,000 pints a week were reaching the casualties of Iwo Jima, Luzon, and Okinawa. This massive capability promised well for the invasion of Japan.[11]

[10]Daboll, "From OLYMPIC to BLACKLIST," pp. 28, 32, Historians files, HUMEDS, RG 112, NARA.

[11]Douglas B. Kendrick, *Blood Program in World War II*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1964), pp. 582–600; Tom F. Continued

USAFWESPAC Prepares

At the USAFWESPAC the Plans and Training Division managed invasion planning. But virtually every part of the headquarters—supply, evacuation, hospitalization, personnel, and the dental and veterinary divisions—contributed to the process, as did the surgeons of bases and other subordinate commands. Geography, preexisting facilities, and planned construction helped to determine which hospitals would be chosen to receive the wounded.

The sheer size of the logistical command was somewhat daunting. By 1945 the growth of the USASOS had transformed the once-small organization into a giant, whose area of responsibility covered more than 2,000 miles of ocean, primitive islands, developed lands, and modern cities. The end of the Philippines campaign saw the rear areas of the Southwest Pacific consolidated under the Australian Base Section, with two subordinate bases, and the New Guinea Base Section, with eight. The Philippine Base Section now included major bases at San Fernando (M) on Lingayen Gulf, Batangas (R) on southern Luzon, Tacloban (K) on Leyte, Cebu City (S) on the Visayan island of Cebu, and especially Manila (X) (*Map 16*). During the summer of 1945 the ruined capital, life throbbing among the rubble, emerged as the prime source of supply, repair, and maintenance for all military equipment. Here were the workshops, the depots, and the open-air storage facilities that sustained the forces and prepared the coming invasion. Port facilities were needed to accommodate a greater tonnage than that handled by New York harbor authorities.

Yet the virtual destruction of Manila during the fighting made it a perilous place for troops and civilians alike. Public health was a pressing problem, and Denit ordered his preventive medicine specialist, Colonel Pincoffs, "to take over—or rather recreate—the health department of a large city." Pincoffs' primary aim was simply to survey the situation. In February 1945 his first view of Manila, from a plane coming in at 10,000 feet, was of a tower of brown smoke. At ground level the city posed a daunting challenge: "Dust, ruins, garbage, smells, swarming humanity—and flies, flies, *flies*," he lamented in a letter to friends. "There is one obvious advantage: whatever I accomplish can only be an improvement."[12]

The city lacked water supply, sewage disposal, food, fuel, electricity, transport, and communications. Its residents cooked rice, and little of that, over fires fed by the wood of wrecked houses. Heaps of garbage lay under a haze of flies; the bare ground was a common latrine. A glance at the crowds showed people with edema or emaciation, the signs of starvation, and poverty increased the incidence of prostitution and venereal disease. The phone system was wrecked, the streetcars were burned, the post office was in flames. If Pincoffs wanted to find someone, he sent out runners to track the person down on foot. Hospitals lacked everything except the

Whayne and Michael E. DeBakey, *Cold Injury, Ground Type*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1958), p. 229.

[12]Quotations from Katharine R. Pincoffs, *Maurice C. Pincoffs, M.D.: Letters From Two World Wars and a Sketch of His Life by His Wife* (Baltimore: Garamond/Pridemark, 1967), p. 251. See also CSurg, USAFWESPAC, Annual Rpt, 1945, pt. 1, pp. 6–12, file 319.1–2, HUMEDS, RG 112, NARA.


PHILIPPINE BASES
June 1945
0
150
Miles
BABUYAN IS
Aparri
Lingayen Gulf
SOUTH CHINA SEA
PHILIPPINE SEA
Dagupan
LUZON
San Fernando
Manila
Base M
Bataan
Cavite
Philippine Base Section Headquarters and Base X
Corregidor
Batangas
Base R
MINDORO
Sibuyan Sea
San Bernardino Strait
MASBATE
SAMAR
Base K
Visayan Sea
Tacloban
PANAY
CUYO IS
LEYTE
Leyte Gulf
Iloilo
Cebu
DINAGAT
CEBU
Base S
PALAWAN
BOHOL
Surigao Strait
NEGROS
MINDANAO SEA
SULU SEA
MINDANAO
Davao
NORTH BORNEO

MAP 16

sick and wounded, and the dead, who were no longer iced, stank and rotted in the morgues.

Amid the chaos, the Philippine civil affairs units struggled to feed the people and distribute medical supplies, supported by the XIV Corps surgeon with what he could spare from the Army hospitals under his control. Pincoffs, long a staunch opponent of government health care at home, made the only recommendation he could—to establish a central authority under American control to coordinate all medical efforts, and attach to it the malaria survey and control, laboratory, and supply units without which it could not function. In this way the new Department of Health and Welfare was created, under Pincoffs himself.[13]

From a headquarters at the San Lazaro Contagious Disease Hospital, he drew into the effort a number of able Americans—Pincoffs, who had served in the Pacific since 1942, commanding the 42d General Hospital and serving on MacArthur's Combined Advisory Committee, knew whom he wanted—plus a staff of well-trained Filipino doctors. He divided the city into eight districts, each with a civil affairs unit whose medical officer became the district health officer. A system for reporting communicable diseases was reestablished, with a bicycle messenger to collect daily reports from the hospitals.

It quickly became clear that despite the circumstances, no major epidemic was in progress. Nevertheless, suspect cases were concentrated at San Lazaro for diagnosis and treatment. Death certification resumed, and bodies again were buried in established cemeteries, rather than vacant lots. Army engineers restored the main water conduit, though the flow remained small until the reservoirs in the hills were retaken from the Japanese. Pit latrines were dug and oiled, pending restoration of the sewage system. DDT disposed of many flies; bulldozers buried the garbage.



COL. MAURICE C. PINCOFFS, MC

The work was done in ten weeks, from the end of February to early April. At its end the city still resembled a huge gypsy camp, but it was functioning, and the solid tradition of public health established before the war had been reborn in the shambles. To Pincoffs the change he had wrought was symbolized in the Children's Hospital, near the university (and now vacated prison) of Santo Tomas. When he arrived, the hospital had been a gathering place for the wounded. Bandaged figures covered

[13]Pincoffs, *Maurice C. Pincoffs, M.D.*, pp. 265–68.

the floors and the stench of gangrene filled in the air. On the last day of his tenure he revisited the hospital and found the halls spotless, clean sheets on the beds, and children on the wards. A "Well Baby" competition had been announced, and the courtyard of the hospital was thronged with "Filipinos in their best embroidered shirts, all carrying babies."[14]

Venereal disease (VD) required special attention, for, as medical investigators remarked in June, the incidence was "increasing to a level so high as to interfere with the military efficiency of the command." About a million men were stationed in the Philippines, and even with antibiotic therapy the prospect was bleak. Overall rates for Leyte and Luzon through April reached 100 per 1,000 troops per annum, and small areas in the islands saw rates of 1,000 to 2,000. Contributing factors were the long continence of troops stationed on the Southwest Pacific's remote jungled islands, the free and friendly relations between Americans and Filipinas, the poverty of the civil population after years of war and occupation, and the heavily infected state of local prostitutes. During the summer, at Denit's suggestion, a full program of prevention began. The command propagandized, put brothels off limits (despite the complaints of local politicians, who had found them a lucrative investment), held commanders responsible for VD cases in their units, provided prophylactic stations, and enforced curfews. Medical installations began a new standardized penicillin regimen for gonorrhea. How far the program might have succeeded under Philippine conditions remained unclear, for the end of the war transformed the situation again.[15]

The rebirth of Manila was a crucial part of the logistical plan, but the whole was a complicated puzzle. The USAFWESPAC headquarters had to carry out the customary duties of a theater logistical command: to procure supplies and equipment for all soldiers in its region of the Pacific; to transport equipment and personnel; and to construct and maintain bases, ports, and the military railway system. Meanwhile, its preparations for the invasion demanded an ever-increasing commitment of resources. Growing numbers of troops, including new arrivals from the United States, massed at its bases in the Philippines and at the Okinawa logistical command, which was still under the control of the Tenth Army. The headquarters organization of the old South Pacific Base Command arrived in the Philippines to support the Sixth Army under the title of the Army Service Command—OLYMPIC (ASCOM-O). Assigned to the USAFWESPAC early in June, ASCOM-O settled on Luzon and joined the planning for the invasion. Similarly, ASCOM-C would support CORONET from its headquarters at Manila. Each service command was to pass to the control of the army it supported when the planned operation actually began.[16]

[14]Ibid., pp. 269–80 (quotation).

[15]Thomas H. Sternberg et al., "Venereal Diseases," in Ebbe Curtis Hoff, ed., *Communicable Diseases Transmitted Through Contact or by Unknown Means*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1960), pp. 292–99 (quotation, p. 292). In the Philippines as in Hawaii, breaking up houses of prostitution apparently reduced the incidence of disease by lowering the total number of sexual contacts—that is, by making sex less convenient and more expensive.

[16]CSurg, USAFWESPAC, Annual Rpt, 1945, pt. 2, pp. 24–25, file 319.1–2, HUMEDS, RG 112, NARA.

By mid-June 1945 all the Philippine bases had been established. Denit knew that troops would stage for OLYMPIC through Manila, Tacloban, and San Fernando. The development of a hospital system to accommodate those who would return as casualties was under way but far from complete.

During 1944 a new pattern in hospitalization had emerged as victory followed victory in the Pacific. Early in the war, command surgeons throughout the Allied-controlled Pacific had broken hospitals up into smaller units, to serve on islands and support small garrison forces scattered over primitive country. But as the lines of attack converged and the forces engaged grew larger, hospitals had followed suit, small units recombining into large ones. During 1945 no more units were disbanded and reorganized, and the development of major hospital centers made progress as many general hospitals were put under a single administrative headquarters to prevent duplication of services and to exploit fully the talents of the few remaining specialists. One of the largest was the huge 26th Hospital Center at Mandaluyong near Manila, with 12,000 beds. Other hospital centers were being planned with the base surgeons and the Corps of Engineers.[17]

Rapid construction was necessary to meet the anticipated invasion date for Kyushu. With Okinawa under the Tenth Army and the southern Philippines under the Eighth Army, and with both armies destined for CORONET, the USAFWESPAC construction program basically concerned Luzon. The usual problems promptly appeared, for example, a shortage of materials and low priority for engineer work on hospitals, and the command thus concentrated on Mandaluyong rather than dispersing its limited means over the whole system. But some other projects also received backing, including a stockaded station hospital near San Fernando for injured prisoners of war. Existing facilities were ordered to increase their expansion beds, and medical personnel were pressed into service as construction workers.[18]

New means of moving casualties out of the theater made their appearance in midsummer. Until June, all water evacuation to the United States had been carried out by troopship, with medical care provided by provisional hospital ship platoons of two officers and fifteen enlisted men each. In the next month, however, an Army hospital transport—the *Emily H. M. Weder*, named for an Army nurse who had been killed in action—joined the work in the Philippines, loading 580 evacuees. Air evacuation from the Philippines to the United States began in June and eventually became a regular service, with the Air Transport Command's Pacific Wing craft flying via Guam, Kwajalein, Johnson Island, and Honolulu to San Francisco. Psychotic and suicidal patients received the highest priority for air transport, primarily because the trip was comparatively short.[19]

[17]Ibid., pp. 54–57, file 319.1–2; 26th, 27th, 28th, 29th, 30th, and 31st Hosp Centers Quarterly Rpts (copies), Jan–Mar 45, file 319.1 (SWPA). All in HUMEDS, RG 112, NARA.

[18]CSurg, USAFWESPAC, Annual Rpt, 1945, pt. 2, p. 67, file 319.1–2, HUMEDS, RG 112, NARA. See also An 4 (Medical) to Log Instrs no. 1, 16 Jul 45, in "History of Planning Division, ASF," 11:4–6, and App C (Hospital Facilities—Tentative) of ibid., in ibid., 11:1–2, Ms 3–2.2 AA 11, CMH.

[19]CSurg, USAFWESPAC, Annual Rpt, 1945, pt. 2, pp. 251–53, file 319.1–2, HUMEDS, RG 112, NARA.



NAVY TRANSPORT EVACUATING CASUALTIES TO THE STATES

As might be expected, supply was a huge and complicated task. Troops being readied for OLYMPIC were reequipped according to priority: first, the ground and service forces that had fought in the Philippines; second, the troops that had not participated in the battles of the Philippines and New Guinea but designated for the invasion of Japan; and third, the soldiers of USAFWESPAC itself. Medical maintenance supplies and equipment were ordered from two kinds of standardized units, maintenance units of items needed in combat and hospital resupply. Though some orders had to be placed in the United States, the USAFWESPAC found most of the required materiel in the theater itself. Ironically, it lacked medical supply personnel for ASCOM-O, most of whom had to be requisitioned from the United States. The situation apparently reflected not only the continuing shortage of personnel in the vast Pacific theater, and especially of those with critical skills, but also the difficulty of transferring personnel, of which Denit had complained.[20]

[20]Ibid., pp. 266–67, file 319.1–2, HUMEDS, RG 112, NARA; An 4 (Medical) to Log Instrs no. 1, 16 Jul 45, in "History of Planning Division, ASF," 11:7–9, Ms 3–2.2 AA 11, CMH.

Pacific distances made the obtaining and storage of biologicals a particular problem. Stocks of smallpox vaccine, which had the shortest lifespan of all—ninety days—were concentrated at Manila for the troops in the Philippines and at Hollandia for those still in New Guinea. Each had to be adjusted to local levels of consumption, with resupply based on priority. For the coming operations, resupply responsibility for biologicals was concentrated in the 19th Medical General Laboratory, which became the USAFWESPAC agent for procurement, storage, and issue.[21]

The Sixth Army

The strains in personnel and construction that afflicted the chief surgeon also confronted the Sixth Army as it made ready for future battles. The invasion forces would consist of eleven Army and three marine divisions, organized in three Army and one marine corps. Medical support was slated to include, beside the organic divisional units, eighteen evacuation hospitals, fifteen field hospitals, and twenty-five portable surgical hospitals. The Sixth Army was to have fixed hospitals under its command—twenty-five general and thirteen station hospitals.[22]

A fundamental if familiar problem was the lag between the troop list being developed for the invasion and the much slower influx of medical personnel. Thus, the Sixth Army surgeon reported that his deficit of medical officers grew over the summer from 165 to 226. Apparently, more than 500 medical officers would be needed to fill the gaps left by the initial understrength, the growing troop list, and the ongoing demobilization process of readjustment—the discharge or transfer of those with long overseas service—following the end of the war in Europe. Yet actual replacements as yet were negligible—too few to make up for normal attrition. And shortages of trained enlisted men—1,500 as the summer began—had to be filled by riflemen, many fresh from basic training. The question of whether they could be trained in time for their new duties was pressing but unanswerable.[23]

Amid many uncertainties, preparations for the invasion began. The health of the command improved rapidly after the Eighth Army took over the ongoing combat against Yamashita's surviving forces. In permanent bivouacs, area control was reestablished, malaria suppressed, and the troops' diet enriched and diversified. Adequate rest improved all aspects of health. The complicated process of reequipping began. Supplies necessary for the troops' health included not only medical materiel but also new personal equipment and clothing needed to fight in a colder climate. All units were ordered to carry with them supplies for thirty days, with additional stocks for fifteen days in division dumps and medical supply units. Reserve stocks were built up in Okinawa and Manila and packaged for rapid delivery by airdrop or by fast ships. Ample supplies of penicillin were provided, and the old system for exchanging litters and blankets—a source of annoyance in many

[21]CSurg, USAFWESPAC, Annual Rpt, 1945, pt. 2, p. 269, file 319.1–2, HUMEDS, RG 112, NARA.

[22]Harrison J. Shull, "Experiences of the Consultant in Medicine, Sixth United States Army," p. 7A, Historians files, HUMEDS, RG 112, NARA.

[23]Surg, Sixth Army, Quarterly Rpt (copy), Jul–Sep 45, p. 4, file 319.1, HUMEDS, RG 112, NARA.

past campaigns, when these items had tended to pile up in rear areas—was replaced by a system of automatic resupply to the forward depots that were to be established on Kyushu.

Storing and distributing the newly available supplies of whole blood was especially important. Each corps took a mobile refrigerator with 200 pints ready for the landing of the assault echelon. Each field and evacuation hospital took an additional 100 pints. Blood collected by the American Red Cross, air-shipped to the Navy's Whole Blood Distribution Center on Guam, would be delivered by plane to the fighting front in refrigerated containers on a daily basis. Off Kyushu six hospital LSTs were to be designated as blood banks, storing the precious substance to resupply the other LSTs and the attack transports.[24]

The Rear Areas

Preparations for the invasion were not confined to the western Pacific. The demands of the immense undertaking were felt thousands of miles to the east as well.

Under the USAFMIDPAC the long evolution of the prewar Hawaiian Department reached its final stage. No longer involved in planning assaults on enemy-held islands, the headquarters commanded a complex of logistical organizations. The chief surgeon's office was responsible for supervising the medical activities of the USAFMIDPAC's three subordinate commands: the Western, Central, and South Pacific Base Commands. The South Pacific Base Command was the rump remaining from the South Pacific Area; the Central Pacific Base Command included chiefly the Hawaiian Islands; and the Western Pacific Base Command, created on 25 April 1945 under the USAFPOA, organized the Army forces on Saipan, Guam, Tinian, Iwo Jima, Peleliu, Ulithi, and Angaur. The growing medical establishment in the Marianas had already played a key role in the Leyte, Iwo Jima, and Okinawa campaigns.[25]

The Western Pacific Base Command surgeon, Col. Elliott G. Colby, supervised all Army medical activities in the region and continued carrying out the same mission when the USAFMIDPAC succeeded the USAFPOA on 1 July. The prospective invasion of Japan brought intensified activity to what had become a major system of forward bases. Especially important were the hospitals and the support provided to the airfields, from which much of the bombing (including, in August, the atomic bombing) of Japan was launched and directed. Eighteen general hospitals worked in the command during 1945, to include five from the 821st Hospital Center on Tinian, where the major air bases were located. Army strength, including air force personnel, reached a total of 183,837 in August, and the hospital construction program expanded, in anticipation of a new influx of wounded. Capacity was already great—the hospitals treated more than 25,000 casualties in June—and during the summer bed capacity rose rapidly from just under 12,000 to a maximum of 19,000. Major medical supply depots were also

[24]Ibid., pp. 10–11, file 319.1; Daboll, "From OLYMPIC to BLACKLIST," p. 23, Historians files; Col. Ashley W. Oughterson, MC, Diary, 6 Aug 45, file 319.1. All in HUMEDS, RG 112, NARA.

[25]CSurg, USAFMIDPAC, Annual Rpt, 1945, p. 1, file 319.1–2, HUMEDS, RG 112, NARA.

readied to support the invasion of Japan.[26]

The mobilization of the Pacific's own resources constituted the main part of the story for OLYMPIC. But during the summer a small number of personnel and quantity of equipment, originally destined for the European battlefields, also began to arrive. In late July surgeon General Kirk assembled in Washington the key medical officers from the Pacific theaters, including Generals Denit, Hagins, Martin, Maxwell, and Willis, and Colonel Westervelt. Many were accompanied by consultants and staff officers. In three days of discussions Denit outlined to Kirk and his staff the developing plans for the final campaigns and his requirements for units, personnel, and equipment. Kirk promised that all help possible would be sent to the Pacific, at last elevated to the rank of the nation's most important theater of war. The timing of these discussions was not without irony.[27]

Within weeks the end of the war came with stunning abruptness. On 6 August the B–29 *Enola Gay*, flying from Tinian, dropped an atomic bomb on the Japanese city of Hiroshima with catastrophic effects. Three days later Nagasaki underwent a similar attack. The Soviet Union declared war and invaded Manchuria, and on 14 August Japan surrendered.

The Occupation Begins

With equal abruptness, a phase of planning that heretofore had received little emphasis became the basis for theater-wide action. In mid-May—when peace in Europe was less than a week old, when the battle for the dams was ending on Luzon, and when the troops on Okinawa seemed immobilized along the front—the USAFPAC had begun to plan for the military occupation of a beaten Japan, under the code-name BLACKLIST.[28]

The move was timely, for Japan's ability to wage war had been reduced, as General Ushijima had shown on Okinawa, to little more than dying in the most expensive manner possible. Planning for the occupation had to take into account the fact that no one knew as yet whether the enemy might collapse before OLYMPIC, or at the time of the invasion of Kyushu, or after Kyushu but before CORONET. Assuming that defense did not go to the last ditch, these seemed to be the principal possibilities. General MacArthur would prepare the plans for the occupation and command the occupation forces once ashore; Admiral Nimitz would provide the ships needed to move the troops to Japan.

USAFPAC planners looked initially to the occupation of the four largest home islands, plus some peripheral areas, including Korea. Japanese armed forces were to surrender their arms; the civil government was to continue in operation under the direction of the occupying power; and Japanese nationals living outside the home islands were to be returned to Japan. Much of the conquered nation already lay in ruins. Yet, even after surrender, armed resistance might continue in one form or another, and starvation and epidemics might face the civil population. With a wide range of possibilities, many unpleasant,

[26]Surg, WPBC, Annual Rpt, 1945, pp. 1, 27, 39, 81; CSurg, USAFMIDPAC, Annual Rpt, 1945, pp. 22, 33. Both file 319.1–2, HUMEDS, RG 112, NARA.

[27]Daboll, "From OLYMPIC to BLACKLIST," pp. 23.1–23.2, Historians files, HUMEDS, RG 112, NARA.

[28]Ibid., p. 24, Historians files, HUMEDS, RG 112, NARA.

MacArthur's staff decided that the Eighth Army should occupy Honshu, from the Tokyo-Yokohama region north, and the northernmost island of Hokkaido; that the Sixth Army should occupy Kyushu and southern Honshu; and that the Tenth Army should move directly from Okinawa to Korea, which would be occupied in conjunction with the Russians. Tentative troop lists for BLACKLIST were completed only a week before the actual surrender of Japan, and the last two weeks of August "undoubtedly . . . found a considerable increase in the midnight oil burning . . . in more than one headquarters staff."[29]

Going ashore in Japan, Americans confronted for the first time the full consequences of their own handiwork. One of the first medical officers to enter Yokohama saw "only ashes, literally miles of ashes interspersed with tall isolated brick chimneys and steel safes." In Tokyo he picked his way through subway tunnels, where thousands of homeless lay in the dark, many already ill with diseases—smallpox, typhoid, and typhus—that could easily become epidemic. Hospitals were filthy and mostly vacant; Colonel Oughterson, now assigned as the USAFPAC's surgical consultant, found only 1,700 beds in all of Tokyo. Contagious diseases were running at about three times normal rates. Hunger was common, and the merchant marine that would have brought supplies to the island nation now lay at the bottom of the sea.[30]

General MacArthur emerged as the central figure in the occupation of Japan. As the Supreme Commander, Allied Powers (SCAP), he gave direction to the Japanese civil government; as the USAFPAC commander, he gave orders to the troops. Disestablishment of the Tenth Army left the XXIV Corps to occupy Korea, with the medical problems of that former Japanese colony consigned to Colonel Potter as corps surgeon. Meanwhile, the occupation of the home islands proceeded rapidly and without the resistance that had been feared. General Hagins, the Sixth Army surgeon, moved with his army's headquarters into Kyoto, while Eighth Army surgeon Brig. Gen. George W. Rice took up residence in Yokohama. Troops poured ashore, and with them arrived the ample medical establishments that had been built up for combat.[31]

Suddenly, the troops had too many medics rather than too few. Accidents did occur and outbreaks of dysentery and respiratory diseases took place; some Americans celebrated too freely and fifteen died after sampling wood alcohol as an enhancement to sake. Rates of venereal disease predictably began to rise, reaching 171 per 1,000 troops per year in November 1945. An Army field hospital even played host to former Premier Hideki Tojo, who had

[29]Ibid., p. 37, Historians files, HUMEDS, RG 112, NARA.

[30]Quotation from Sams, "Medic," 2:349, CMH–L. See also Oughterson Diary, 4 Sep 45, file 319.1, HUMEDS, RG 112, NARA. On conditions in Japan and Korea after V–J Day (2 September 1945), see Albert E. Cowdrey, *The Medics' War*, United States Army in the Korean War (Washington, D.C.: U.S. Army Center of Military History, 1987), pp. 36–68; D. Clayton James, *The Years of MacArthur*, 3 vols. (Boston: Houghton Mifflin Co., 1970–85), 2:778–92.

[31]Surg, Sixth Army, Quarterly Rpt (copy), Oct–Dec 45, p. 1, file 319.1, HUMEDS, RG 112, NARA; Blanche B. Armfield, *Organization and Administration in World War II*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1963), pp. 489, 495.

bungled an attempt at suicide, saving him for later trial and the gallows.[32]

But the primary fact about troop medical care was its superfluity. Typical was the experience of Maj. Gen. Innis P. Swift's I Corps, Sixth Army, which occupied the Osaka-Kobe-Kyoto area. Unit dispensaries and corps collecting and clearing companies were well able to care for ordinary medical problems, and the few men who became seriously ill were sent offshore to Navy hospital ships or flown to the vast (and now largely useless) hospital centers of the western Pacific. Preventive medicine was important. Troops infected earlier continued to take Atabrine, while teams dusted with DDT the Japanese Army barracks to be used as housing. Engineers worked to upgrade water purification. Meanwhile, hospitals were arriving as scheduled, setting up shop, and waiting for patients who never came. At the beginning of 1946 at least eighteen medical units—portable surgical hospitals, evacuation hospitals, collecting and clearing companies, and the medical battalions of five divisions—were "trying to operate hospitals of some sort in I Corps zone of responsibility, and in many cases located within two blocks of each other."[33]

This situation did not last long. The process of readjustment had been delayed in the Pacific theaters, because of the anticipated invasion of Japan. The end of the fighting in Europe had already launched the complex process of reshuffling personnel, and soldiers with low adjusted service rating scores were identified and moved into units destined for the USAFPAC. The end of the war in Asia now brought readjustment to the Pacific. Political pressure for quick discharges mounted, as soldiers and their families demanded—and the president and Congress hastily conceded—that all who had served overseas should return home as soon as possible. The critical point score was adjusted downward, not once but again and again, and on 21 September 1945 the Eighth Army bade farewell to its first group of departing veterans. By November the 4th Replacement Depot near Yokohama was processing 25,000 soldiers a month.

Meanwhile, half-trained replacements arrived—in the jaundiced view of medical officers a poor lot, by and large, immature and susceptible to psychoneurotic disabilities and a long list of childhood and venereal diseases. The rapid depletion of the invasion force and the departure of medical troops ended the brief period of superfluity in Japan. In a few years there would again be too few Army medics in the Far East, as General MacArthur would discover in 1950, when the Korean war began.[34]

Despite such rapid changes, the health of the troops proved to be the least pressing of medical problems during the early months of the occupation. Far more serious were the conditions that medical officers discovered among the liberated prisoners of war and the Japanese people.

[32]OofSurg, USAFPAC, ETMD, Oct 45, pp. 19–21, file 350.05, box 72, Entry 54B, RG 112, NARA; William Craig, *The Fall of Japan* (New York: Penguin Books, 1979), pp. 316–27; Cowdrey, *Medics' War*, p. 44.

[33]Surg, I Corps, Annual Rpt, 1946, p. 3, file 319.1–2, box 565, Entry 54A, RG 112, NARA.

[34]On the readjustment process, see Cowdrey, *Medics' War*, pp. 65–68; Graham A. Cosmas and Albert E. Cowdrey, *Medical Department: Medical Service in the European Theater of Operations*, United States Army in World War II (Washington, D.C.: U.S. Army Center of Military History, 1992), pp. 596–602.



LIBERATED ALLIED PRISONERS *gathering air-dropped supplies at a camp near Tokyo*

For Allied prisoners, the end of the war brought a sudden transformation from being remnants of defeated armies to members of victorious ones, and from a lifestyle resembling slavery to freedom. Elaborate schemes for handling the former prisoners of war had formed part of the BLACKLIST planning. Responsibility for the more than 11,000 Americans set free in Japan fell to the Eighth Army, and the treatment of hospital patients was assigned to the 42d General Hospital at Tokyo.

Typically, liberated prisoners were moved to seaside repatriation centers, where an Allied port commander separated them by nationality. Americans discarded their prison clothing, bathed, received thorough physicals, and dressed in completely fresh uniforms. Stretcher cases were received by medical facilities, on- or offshore, and underwent a similar ritual. Intelligence officers questioned recovered prisoners about their prison experiences, including any war crimes that they had witnessed. The interrogations revealed ample new evidence in a grim story, the rudiments of which were already known, though imperfectly, in Allied countries. The physical examinations tended to confirm the accounts, for they revealed the consequences of prolonged malnutrition and abuse.

Most Allied prisoners had been taken in the earliest battles, and those who had



LIBERATED PRISONER ENJOYING A FULL MEAL AND ATTENTIVE CARE

endured so long an ordeal presented "a picture of severe starvation, sunken eyes, high, prominent cheek bones [*sic*], distended abdomens, [and] marked atrophy of all muscles." Symptoms of beriberi were common, reflecting the poor rice diet on which many had lived, and virtually all had intestinal parasites. Amebic dysentery, chronic coughs, and tuberculosis were also noted. Doctors were surprised to see that—as those confined in the camps had long believed—psychoneurotics were rare. Medics who examined the prisoners emphasized their essential normality and the powerful group bonding that had enabled them to survive. As one report stated, "They regard themselves as perfectly normal and do not ask for nor expect pity."[35]

[35]Quotations from OofSurg, USAFPAC, ETMD, Oct 45, pp. 106–07, 108, file 350.05, box 72, Entry 54B, RG 112, NARA. See also Armfield, *Organization and Administration*, p. 496; Cowdrey, *Medics' War*, p. 45.

The primary treatment for all except the dying was food. Dieticians readied a special ration, which was served three times a day with no limit on refills. Canteens and post exchanges provided snacks twenty-four hours a day. In the three weeks that most remained under medical care in Japan, the average weight gain was twenty pounds, and thirty to forty pounds was not uncommon. By the time they left for home, few looked like men who had undergone a long ordeal. But as later studies were to emphasize, the effects of imprisonment were not to be easily shaken off, and lifelong susceptibility to many ills would mark a large proportion of the survivors. Former prisoners of war from the Pacific theaters, in comparison to those from the European theater, suffered much more severely—in particular from chronic tuberculosis, emotional disturbances, eye problems, gastrointestinal disorders, and heart conditions. Many lived out long and essentially normal lives at home, but others had suffered permanent impairments and met untimely deaths.[36]

Medical War Crimes

As the former prisoners filled out written questionnaires about their experiences and responded to interrogators, evidence accumulated about war crimes. Trials of major defendants, accused of launching the wars against China and the West, began in Tokyo in May 1946. Other trials in Yokohama, Manila, and Rabaul examined evidence and pronounced verdicts upon lesser defendants. In some cases, military courts of Allied armed forces brought charges locally against prison camp guards and commandants. The trials disclosed no systematic program of extermination resembling the Nazi holocaust, but they did bring to light overwhelming evidence of widespread cruelty and neglect in the treatment of prisoners and captive populations. The trials also demonstrated that a few Japanese doctors had played roles in the wartime atrocities.[37]

No doubt much of the inadequate medical treatment received by prisoners in Japanese camps reflected the fact that Japanese medical officers of good quality were unlikely to be assigned to their care. Indifference or casual brutality seconded incompetence. An American Army doctor at Fukuoka No. 1 camp on Kyushu, to which many survivors of the *Oryoku Maru* had been brought, voiced a common complaint when he told interrogators after the war that "the Japanese doctors in this camp are *not worthy of any consideration whatever, that they were very neglectful in their duties and at times refused to supply medicine to the American officers who were dying of pneumonia and whose lives could have been otherwise saved.*" Cases turned up in which Japanese camp physicians had falsified death certificates—in one case certifying, without troubling to examine the body, that a prisoner who had been beaten to death was a victim of enteritis.[38]

There were, of course, exceptions. Even reports prepared in the immediate

[36]Bernard M. Cohen and Maurice Z. Cooper, *A Follow-Up Study of World War II Prisoners of War*, VA Medical Monograph (Washington, D.C.: Department of Medicine and Surgery, Veterans Administration, 1954), pp. 19–23, 65.

[37]Arnold C. Brackman, *The Other Nuremberg: The Untold Story of the Tokyo War Crimes Trials* (New York: William Morrow, Quill, 1987), pp. 33–44.

[38]John M. Gibbs, "Prisoner of War Camps in Japan and Japanese Controlled Areas, as Taken From Reports of Interned American Prisoners," p. 7, Ms 4–4.5A AA, CMH.

postwar period acknowledged that some Japanese physicians attached to the prisons were conscientious, like the one at Fukuoka No. 22 who visited the hospital twice weekly, remaining all day, and spent a third day at the convalescent ward. He belonged to the staff of one of the better camps, where treatment of the prisoners was generally good and morale, despite hard labor and cold weather, was reported to be excellent. In several camps, however, Japanese enlisted orderlies made a practice of overruling POW doctors, making their own diagnoses and ordering the sick back to work as they pleased. A medical sergeant at Niigata, one of the worst camps in Japan, was sentenced to death for his contribution to the sufferings of some captured Australians.[39]

Such cases reflected the unsatisfactory conditions in the customary run of Japanese camps. By contrast, medical experiments on living captives were rare but horrifying. Vivisection was carried out by Japanese military and civilian doctors, apparently reflecting the official view that B–29 crews who bombed civilian targets were not prisoners of war but war criminals. Turned over to the *Kempei Tai* (military police), the captured airmen were often tortured and executed with or without trial.

Others, viewed as dead men in any case and therefore expendable, became human guinea pigs. Between eight and twelve experimental operations were performed in the autopsy room of the Kyushu Imperial University medical school, with Japanese Army doctors, civilian physicians, and medical students observing. Surgeon Ishiyama Fukujiro removed the healthy lung of an anesthetized prisoner, who was then killed; a second victim, after losing one lung and part of the other, died on the autopsy table; three fliers were drugged and dissected, also dying on the table. Sick prisoners who were not airmen also suffered. At Shinagawa Hospital and Prisoner of War Camp, the commandant, Hisakichi Tokuda, was also the chief medical officer. Though he experimented on prisoners, killing four by injecting them with a soybean solution, he escaped the death penalty when a General Headquarters, SCAP, review determined that he was not sane.[40]

Those responsible for some of the most flagrant medical mistreatment of prisoners were not prosecuted in the war crimes trials. At Pingfan, near Harbin, Manchuria, a special unit under Lt. Gen. Shiro Ishii developed bacteriological weapons, breeding vectors and making bombs to disseminate a variety of diseases. The unit kept prisoners—apparently Chinese, Manchurians, and White Russians—to use as experimental subjects, infecting, treating, and reinfecting them until they died. The procedures were comparable to those in some Nazi concentration camps, where Jews, Poles, Russians, and members of other unfavored groups were used in grotesque experiments.

Yet Ishii and his accomplices escaped prosecution. When the data they supplied to American interrogators proved

[39]Ibid., pp. 49–50, 118, Ms 4–4.5A AA, CMH; General Headquarters (GHQ), Supreme Commander for the Allied Powers (SCAP), "History of the Nonmilitary Activities of the Occupation of Japan: Trials of Class "B" and "C" War Criminals," pp. 112, 115, Ms 8–5 AA 2, CMH.

[40]GHQ, SCAP, "Occupation of Japan: Trials of War Criminals," pp. 183–201, Ms 8–5 AA 2, CMH; Saburo Ienaga, *The Pacific War: World War II and the Japanese, 1931–1945* (New York: Random House, Pantheon Books, 1978), pp. 189–90.

tantalizing to experts in the American biological warfare program, General MacArthur recommended that Ishii and some of his colleagues be given assurances that, if they provided more complete information, it would not be used as evidence of war crimes. The cabinet-level State-War-Navy Coordinating Committee was divided over the issue; the military departments were favorable to MacArthur's proposal, but the State Department was reluctant to give explicit approval. Delay allowed the period during which evidence was being taken for the Tokyo trials to elapse. As a result, the American government gained Ishii's information—and denied it to the Russians—without making a formal promise. The policy recommended by General MacArthur and tacitly allowed by Washington entailed a double standard of justice in the treatment of German and Japanese war criminals in a case involving one of the worst medical atrocities of World War II.[41]

The Japanese

At the war's end, prisoners were not the only people in Japan who were in need of help. Many of the Japanese were also in poor condition. Working through the Japanese government, the occupation authorities imposed upon the entire Japanese people the kind of health discipline that, in the United States, characterized the armed services alone.[42]



BRIG. GEN. CRAWFORD F. SAMS, MC
(Rank as of 12 May 1948)

Such ample powers were needed by MacArthur's chief of public health and welfare, Col. Crawford F. Sams, MC,[43] selected by the surgeon general to head the newly created office under the USAFPAC's G–5 (civil affairs) section. During the period of invasion planning Sams had prepared to use field and station hospitals, staffed by Japanese medical personnel, to care for civilians injured in the fighting, and he had earmarked grain supplies, blankets, and clothing for civilian use. The Japanese surrender had eliminated the danger of

[41] *Materials on the Trial of Former Servicemen of the Japanese Army Charges With Manufacturing and Employing Bacteriological Weapons* (Moscow: Foreign Languages Publishing House, 1950); Cowdrey, *Medics' War*, pp. 218–19. See also Msg, CINCFE C-52423 to WDGID, 6 May 47, file 107–0, box 1519, Entry 143, RG 153, NARA.

[42] Armfield, *Organization and Administration*, p. 498; Cowdrey, *Medics' War*, p. 37.

[43] Sams had served as the U.S. Army Forces in the Middle East surgeon from 1941 to 1944 and thereafter was assigned to the War Department General Staff in Washington.

vast numbers of additional civilian war casualties, but in other respects had left him still facing a most difficult situation.

Now in charge of public health and welfare, Sams confronted the problems of a wrecked and defeated nation. Public health in prewar Japan had been combined with labor affairs in a single ministry, and on the local level had primarily been the responsibility of the police. Lacking medical direction, public health had languished; despite the striking modernity of some prewar Japanese cities, most of the people had lived in comparatively primitive conditions. As a result, malaria, typhus, and encephalitis were endemic, tuberculosis was widespread, and enteric diseases were common. Many years of war had devastated the cities and left a population of homeless, ill-nourished, and exhausted people ripe for outbreaks of disease. As millions of Japanese were driven out of their overseas conquests, exotic as well as homegrown ailments threatened the home islands.[44]

The policy of the American occupation was to improve national health in order to prevent disease and unrest and to safeguard the health of Allied troops by protecting that of the civil population. In September General Headquarters, SCAP, began a comprehensive survey of hospital facilities, medical supplies, and food. The Navy quarantined the ports, and Army medical supplies were diverted from the Philippines to Japan. In the fall and winter the spread of life-threatening diseases confirmed Sams' early forebodings; smallpox increased and louse-borne typhus fever appeared among Korean coal miners on Hokkaido and spread to Honshu as the liberated workers headed for home. Smallpox was rooted out by mid-1946 through the systematic vaccination of the entire nation—some 75 million people. The fight against typhus was more complex.

Repatriates returning from mainland Asia introduced typhus into port cities, notably Osaka. An often fatal disease spread by lice, typhus was traditionally associated with cold weather, when people bathed and changed clothes less frequently, and had long historical associations with times of hunger and the disruptions of war. With many Japanese living on 1,000–1,400 calories a day, the nation appeared in danger of a major epidemic. Foci of the disease developed wherever louse-infested people huddled for warmth. At railroad stations, crowds of shivering vagrants spread the disease to the passengers, who traveled by the thousands every day from homes in the countryside to jobs in the shattered cities. The trains themselves were memorably crowded, with people jamming the interiors and hanging on the exteriors. Not only did lice spread under such conditions, but the microbes that cause typhus were inhaled by passengers from dry louse feces on their neighbors' clothes and hair.[45]

[44]GHQ, SCAP, "History of the Nonmilitary Activities of the Occupation of Japan: Public Health, September 1945 Through December 1945," pp. 1–7, Ms 8–5 AA 7/5, CMH. See also Crawford F. Sams, "American Public Health Administration Meets the Problems of the Orient in Japan," *American Journal of Public Health and the Nation's Health* 42 (May 52): 557–65; Thomas B. Turner, "Japan and Korea," in Ebbe Curtis Hoff, ed., *Civil Affairs/Military Government Public Health Activities*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1976), pp. 664–65.

[45]GHQ, SCAP, "Occupation of Japan: Public Health," pp. 8, 28–30, Ms 8–5 AA 7/5, CMH. Typhus is caused by rickettsiae, organisms that are larger than viruses but smaller than bacteria. See Arthur Hurst et al., *Medical*

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INOCULATING AGAINST TYPHOID

By December 1945 typhus had reached "epidemic proportions." General Headquarters, SCAP, had reorganized the Japanese Ministry of Welfare to concentrate solely on public health, while labor questions were transferred to a new government department. Under Sams' direction and with the assistance of American medical officers the reformed ministry organized a national campaign, using the expertise of the United States of America Typhus Commission and supplies of antityphus vaccine and louse-killing DDT powder imported from the United States. Cities were divided into areas of twenty-five blocks each. Teams of Japanese workers traced cases of possible fever and used dust guns to disinfect anyone who might have had contact with the disease. DDT's residual killing powder enabled health workers to dust ships and railroad cars. A campaign of education spread the facts on typhus through the

Diseases of War, 4th ed. (Baltimore: Williams and Wilkins Co., 1944), pp. 235–60, and Hans Zinsser, *Rats, Lice and History: Being a Study . . . Which . . . Deals With the Life of Typhus Fever* (New York: Blue Ribbon Books, 1935). Descriptions of the trains abound in the literature of the time; see, for example, Michihiko Hachiya, *Hiroshima Diary: The Journal of a Japanese Physician, August 6–September 30, 1945*, trans. and ed. Warner Wells (Chapel Hill: University of North Carolina Press, 1955), p. 93.

radio, press, pamphlets, and posters. By March 1946 the epidemic of about 30,000 cases had been contained. In the second half of 1946 only 1,202 cases were reported; in all of 1947, 1,141; in 1948, 474; and in 1949, 121. The textbook suppression of the disease can be attributed to the unique interaction of military medicine, Japanese social discipline, and the public health methods developed by American researchers during World War II.[46]

Other contagious diseases were controlled or stamped out in turn by reestablishing sanitation and launching a program of immunization that benefited some 20 million people. A dangerous increase in typhoid rates was reversed, and in the spring of 1946 a cholera outbreak was contained. The reconstruction of functional water and sewer systems in the cities enabled Sams to roll back a threatening wartime rise in Japan's dysentery rate. In this case, however, cultural habits prevented long-term improvement. Farmers continued to fertilize with nightsoil, many foods continued to be eaten either raw or lightly cooked, and a multitude of street stalls and tiny restaurants baffled public health control.

Ultimately, General Headquarters, SCAP, accomplished a revolution in public health, building upon foundations that were laid in the immediate postwar period. National expenditures on health and sanitation rose from about 30 million yen in 1945 to 1,167 million in 1950. The medical and nursing professions were reorganized, and Japanese manufacturers were encouraged to produce their own biologicals and other medical needs under strict quality controls. Systematic collection of statistics on disease, which had almost ceased in 1945 under the pressure of the war, resumed the following year. Humanitarianism and sound policy coincided, and the benefits were reaped by the Japanese people. Life expectancy rose during 1947–50 from fifty to fifty-nine years for men and from fifty-four to sixty-two years for women. Sams received well-merited praise for "one of the great recent public health achievements," which he explained as "just a matter of organization."[47]

Nuclear Warfare

Humane policy, however, could not erase all the consequences of a struggle that had been merciless even by the standards of World War II. As of this writing, the Japanese-American war remains the only one in which atomic weapons have been used. Tracing the medical consequences at Hiroshima and Nagasaki became the preoccupation of a number of Japanese and American scientists in the postwar period, including some Army medical officers.

One of the first to visit Hiroshima was Colonel Oughterson, Denit's chief surgical consultant. In civilian life Oughterson had been a distinguished academic physician, who entered the Army from a position on the faculty of Yale University's medical school. In four and a half years of service with the USAFISPA, USAFPOA, and USAFPAC he had seen much of war, but nothing

[46]GHQ, SCAP, "Occupation of Japan: Public Health," pp. 27–30 (quoted words, p. 28), Ms 8–5 AA 7/5, CMH.

[47]Ibid., pp. 102, 134, 146, 166, Ms 8–5 AA 7/5, CMH; "A Good Man Gone," *Newsweek*, 8 Aug 55, p. 46 (quotations). As in Germany, DDT and penicillin had been known in wartime Japan only on an experimental basis.

that prepared him for the blasted plain that had been Hiroshima. On 8 September 1945, unarmed and relying entirely on the protection of the Japanese, Oughterson departed from Tokyo with a mixed group of American and Japanese medical professionals. Flying over Hiroshima, he viewed "destruction . . . beyond words—thought of a child building a city with blocks and when he was thru, knocking it all down. . . ."[48]

After landing, Oughterson and his party traveled on an ancient bus that broke down twenty times on the way. Each time a small circle of curious Japanese gathered, their faces breaking into smiles when the Americans passed out candy and cigarettes. A ferry ride across the Inland Sea took the group to the island of Miyajima, where the Americans, after being wined and dined, retired to their hotel rooms a little bemused by the reception their recent enemies had given them. "The adaptability, flexibility of the human mind," noted Oughterson in his diary, "and the faith of mankind at times in each other amazes me."[49]

The next day the group returned to the city and entered a zone of cyclonic destruction, amid a plague of flies. Buildings had been twisted and crushed; the rubble, finely divided; and everything, but for a few telephone poles, chimneys, and concrete structures, leveled and burned. A major from the *Imperial General Headquarters* who had seen the bombing described the "great violet bright light" and the blast and heat. Estimations of the dead were uncertain, and the memories of the survivors were unreliable. A Japanese doctor who had lived through the blast summed up the scene: "Hiroshima was no longer a city, but a burnt-over prairie."[50]

The explosion had come upon a city waking up, breakfasting, and moving to work. Almost without warning, survivors found themselves transported into a nightmare world, surrounded by shattered buildings and by the dead and wounded. Venturing into streets filled with dust, smoke, and the heat of wind-driven fires, they joined processions of battered people, many of whom were naked. Those who had been burned walked with their arms stretched out, to avoid the friction of one raw surface against another.

In the few surviving hospitals patients were packed "like the rice in *sushi*." Showing early signs of radiation sickness, they vomited and defecated, lay in their own filth, and turned the hospital halls and doorways into latrines. Two hundred and seventy of the city's 298 doctors and 1,654 of its 1,780 nurses had been injured or killed. Visitors who entered the city found bizarre sights—the nude corpse of a railroad worker with white lettering from the back of his work uniform clearly visible on his burned torso; human shadows burned into cement; a dead man who still sat on his bicycle, propped against a bridge railing. Meanwhile, refugees fled into the hills, some sloughing their burned skin so that they looked like ragged scarecrows. Many died along the roads.[51]

[48]Oughterson Diary, 8 Sep 45, file 319.1, HUMEDS, RG 112, NARA. Before its destruction Hiroshima had contained both the *2d Army* and *Western Command* headquarters, a military school, and a military hospital.

[49]Ibid.

[50]First quotation from ibid.; second quotation from Hachiya, *Hiroshima Diary*, p. 8.

[51]Hachiya, *Hiroshima Diary*, pp. 11 (quotation), 14–15; Oughterson Diary, 9 Sep 45, file 319.1, HUMEDS, RG 112, NARA.

For a time, Japanese doctors had been confused by the emerging symptoms of radiation sickness, a problem compounded by the destruction of microscopes and blood count devices that might have enabled them to note the victims' characteristic leukopenia, or low white blood cell count. Symptoms of malaise, nausea, vomiting and diarrhea, and the development of ulcers in the mouth were noted. Japanese soldiers who had been ordered into the city to aid the survivors became abnormally fatigued and soon developed symptoms like the bomb victims. The bone ash of victims "showed 100 times natural radiation," Oughterson noted, and relatives piously carrying bone fragments away from funeral pyres sometimes received radiation burns. Japanese physicians believed at first that poison gas or bacteriological weapons had been used in conjunction with the bomb, misled by not only the symptoms of the injured but also the city's strong smell that had been produced by the ionizing radiation of the bomb. Oughterson's first action when he arrived back at Tokyo was to send 100 million units of penicillin to Hiroshima.[52]

Oughterson then departed for Nagasaki with a team of medical officers, including Col. Stafford L. Warren, MC, chief of the Manhattan District's medical section. Because of his expertise on the effects of radiation, the former University of Rochester professor was selected to join the Manhattan Project team organized to study the atomic bombings. Before the bombing Nagasaki had been an important military target, with the Mitsubishi steel works and a torpedo factory. But the city also had been the port through which Western medicine had entered Japan and the site of a medical school, which had been completely destroyed with all of its faculty and students. Oughterson saw, in addition to the Japanese casualties, several Allied prisoners of war who were showing symptoms of radiation sickness. The city government counted 35,000 confirmed deaths, and more were expected, since the area devastated by the second atomic bomb had a population of about 120,000 residents. The Navy hospital ship USS *Haven*, at anchor in the harbor, already had sent supplies, including penicillin.[53]

By the time he viewed the ruined cities, Oughterson had already formulated and presented to Denit a plan for a scientific investigation of the atomic bombings. When the chief surgeon approved, Oughterson and Warren agreed to coordinate Army and Manhattan Project efforts and to prepare a joint report. On returning to Tokyo from Nagasaki, Oughterson put forward the suggestion for a cooperative investigation by a Japanese-American commission. In so doing, he recognized the efforts that the Japanese had launched in the immediate aftermath of the bombings at a number of medical schools and institutes. Chief among their investigators were Masao Tsuzuki, professor of surgery at Tokyo Imperial University and an admiral in the Japanese Navy, and Takeo Tamiya, the Harvard-educated dean of the Imperial

[52]Oughterson Diary, 9 Sep 45, file 319.1, HUMEDS, RG 112, NARA.

[53]Ibid., 20–23 Sep 45, file 319.1, HUMEDS, RG 112, NARA; Vincent C. Jones, *Manhattan: The Army and the Atomic Bomb*, United States Army in World War II (Washington, D.C.: U.S. Army Center of Military History, 1985), pp. 543–44. A small number of Allied prisoners of war also died at Hiroshima.

University Medical School, who placed all the facilities of the school at the commission's disposal.

Finally, the U.S. Navy became involved. Its Bureau of Medicine and Surgery dispatched Comdr. Shields Warren and a medical research unit, drawn from the Naval Medical Research Institute in Bethesda, Maryland, as part of the Naval Technical Mission to Japan. Working from the *Haven*, the naval medical unit began its studies in Nagasaki on 25 September. The unit soon joined the Army and Manhattan Project teams at the Omura Naval Hospital, where the Japanese commanding officer, Admiral Kodo Yasuyama, aided the ongoing work. The involvement of the principals, the pointlessness of duplicate investigations, and the contributions already made by the Japanese all favored, as did common sense, the pursuit of a single combined effort to understand the effects of atomic weapons both on the people who had died and on those who survived. General Headquarters, SCAP, thus formed the Joint Commission for the Investigation of the Effects of the Atomic Bomb in Japan, placing Oughterson in charge.[54]

The investigators, consisting of American military personnel and Japanese scientists, were divided into two groups, one of which entered Nagasaki on 28 September and the other Hiroshima on 12 October. They reexamined the records, studied the survivors, collected autopsy material, and assembled photographs and films. In the professional interaction between the Japanese and Americans, a common concern with understanding the effects of the bomb and assisting its victims helped to lessen the familiar hatreds of the war. The Joint Commission's report, classified for six years after the war, was ultimately made public by the Atomic Energy Commission in 1951.

On the whole, it appeared that about 106,000 people had died in the two atomic attacks, most from blast, burns, and gamma radiation. Also documented were the terror that had followed the bombings, the flight of the populations from the shattered cities, and the overwhelming number of medical facilities that had survived the attacks. In 1955 Oughterson and Shields Warren repeated and amplified the conclusions that they and their associates had reached, admitting that even then much remained unknown. Whether survivors would develop cancers to an abnormal degree, suffer shortened lifespans, or show decreased fertility and other genetic abnormalities were questions that remained a decade after the bombs and still would require "many years or even generations for their final solution."[55]

[54]Jones, *Manhattan*, p. 545; Ashley W. Oughterson and Shields Warren, *Medical Effects of the Atomic Bomb in Japan* (New York: McGraw-Hill Book Co., 1956), pp. 6–9; Committee for the Compilation of Materials on Damage Caused by the Atomic Bombs in Hiroshima and Nagasaki, *Hiroshima and Nagasaki: The Physical, Medical, and Social Effects of the Atomic Bombings*, trans. Eisei Ishikawa and David L. Swain (New York: Basic Books, 1981), pp. 508–09. Masao Tsuzuki, as a student at the University of Pennsylvania before the war, had published a study of X-ray radiation effects; see "Experimental Studies on the Biological Action of Hard Roentgen Rays," *American Journal of Roentgenology and Radium Therapy* 16 (1926): 134–50. See also Ashley W. Oughterson et al., *Medical Effects of the Atomic Bombs: The Report of the Joint Commission for the Investigation of the Effects of the Atomic Bomb in Japan* (Oak Ridge, Tenn.: United States Atomic Energy Commission, 1951).

[55]Quotation from Oughterson and Warren, *Medical Effects*, p. 426. See also United States Strategic Bombing Survey, *The Effects of Atomic Bombs in Hiroshima and Nagasaki*, Report of 30 June 1946 (Washington, D.C.: United States Government Printing Office, 1946), p.

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Despite such gaps, the findings of the various survey groups that studied the bombs embodied the last and most telling wisdom to be learned from the medical history of the Pacific war, even as they suggested lessons for wars to come. In the struggle against Japan, modern medicine had overcome many problems that had seemed insuperable. But the comprehensive destructiveness of nuclear weapons appeared to pose a challenge to which there was no medical solution.[56]

15, copy in CMH–L, which cites higher figures. A subsequent study suggests that genetic effects of the bombs are less serious than had been feared, but that certain types of cancer—especially bone marrow, thyroid, and breast (female)—can be traced to the brief exposure of the survivors to intense radiation. See John D. Boice, Jr., "Studies of Atomic Bomb Survivors: Understanding Radiation Effects," *Journal of the American Medical Association* 264 (Aug 90): 622–23.

[56]Jones, *Manhattan*, pp. 543–50.

EPILOGUE

The Medical Service in Retrospect

Until the last months of the fighting, the medical service that supported the American Army in the war against Japan faced immense obstacles to success. Unlike the medics in other theaters of operations, those in the South and Southwest Pacific Areas were given little time to organize or prepare. The Southwest Pacific Area was the scene of bitter fighting from the first day of the war, and action continued in the mountains of Luzon until its end. The South Pacific Area was the scene of the first American counterstroke.

Both area commands fought bitter actions, on the Solomons and New Guinea, when supply lines were tenuous and environmental conditions almost intolerable. They also fought another kind of enemy—severe malaria epidemics, to which the immaturity of their medical systems and the indifference of some commanders to medical advice contributed. For a time, the rates of sickness resembled pre-twentieth century war. While the environmental conditions were reminiscent of earlier American campaigns in the Caribbean and the Philippines, the scale of the Pacific conflict was incomparably greater, and as a result almost insoluble logistical difficulties beset medical planners in the headquarters and units in the field. Meanwhile, on the continent of Asia, China-Burma-India medics encountered conditions that were no less threatening and logistical tangles that were even more disheartening than those on the Pacific islands.

In consequence, disease continued to take a toll even after the medics and the line alike had become sophisticated in the ways of jungle warfare. Although the early epidemics of malaria in the South and Southwest Pacific Areas were not repeated after the spring of 1943, and although astonishing success was recorded in controlling outbreaks that might have threatened operations, the Southwest Pacific continued to have the highest death rate from disease of any theater, immediately followed by China-Burma-India. Indeed, these two theaters accounted for three-fourths of the Army's disease deaths during the war.

In historical context, however, that record appeared in a more favorable light. Death rates from disease were only slightly over 1 per 1,000 troops per year, at a time when the rate for the Army as a whole was .59 and for the European theater of operations only .55. As recently as World War I, the Army's annual death rate from disease had been 16.47, or twenty-eight times as high as the World War II rate. A comparatively small

medical service, working in often dreadful environments in the Southwest Pacific and China-Burma-India, was able to exploit the well-established methods of preventive medicine plus a few recent discoveries—notably Atabrine and DDT—to reduce losses to historically low levels. The two theaters provided the darkest shading in what was, overall, an extraordinarily bright picture.[1]

Advances that were equally notable marked medical organization. The Army as a whole had been organized to fight mass battles on land; amphibious war demanded changes that were nowhere more difficult to accomplish than among medical support units, whose effectiveness depended ultimately on a few skilled individuals. Dividing up medical units among battalion landing teams, enhancing regimental medical support to enable combat teams to fight alone, drawing upon an inadequate pool of doctors to support the garrisons of many small islands, and devising units to operate in deep jungle all strained medical resources and demanded the utmost in improvisation. Amphibious medical support evolved within a framework of doctrine first devised by the Marine Corps and subsequently modified by World War II experience in the Pacific and Mediterranean theaters. By the war's end it had become a well-established technique, marked by Army-Navy cooperation, by the rapid and well-coordinated advance of direct support units, and by the early landing of medical units whose sole purpose was disease prevention and care of the civil population.

To some extent even the great Pacific distances yielded to the airplane. The rise of air evacuation was noted in almost all theaters where American medical personnel worked, but was nowhere more dramatic than in the Pacific. Wherever evacuation routes were long, terrains almost impossible to traverse on foot, and ships too slow, the air ambulance (and, far more frequently, the converted cargo plane) came into its own. In some respects, China-Burma-India exaggerated the features of the island war. Fighters in continental Asia lacked the ocean as the universal medium of transport and supply. Hence, deep penetration units lived longer in the jungle, depended more upon the native peoples, and felt an even greater need for air resupply and evacuation. During the war, however, the potential of existing aircraft was not fully realized and exploited. The few Army helicopters employed in China-Burma-India and later in the Philippines were only a brief prevision of future frontline aeromedical evacuation.

Despite many common features—the great distances, the tropical climate, the critical role of the Navy in protecting American and interrupting Japanese supply lines—the medical experience in the Central Pacific was so different from that of the theaters to the south that it almost seemed to belong to another war. In contrast to the South and Southwest Pacific Areas, the Central Pacific Area was given plenty of time to prepare. Most of the islands where marines and soldiers fought were free of malaria, and with few exceptions they were not so harassed by other tropical diseases. On the other

[1]Frank A. Reister, ed., *Medical Statistics in World War II*, Medical Department, United States Army in World War II (Washington, D.C.: Office of the Surgeon General, Department of the Army, 1975), pp. 11, 32. It should be noted that World War I in its time had marked epochal progress in controlling disease in American armies. According to Reister, death rates were reduced by about 90 percent during the century preceding World War I.

hand, the tactical situation in some respects was more severe because the atolls were too small to permit surprise landings. Entrenched Japanese resistance caused very high casualty rates, especially among the marines at Tarawa and later at Iwo Jima. Army statistics lumped together the sickly South Pacific and the comparatively healthy Central Pacific. Even so, admission rates for disease were lower in the Pacific Ocean Areas than for any theater of the war except the European and the zone of interior.[2]

With the approach of American forces to the large islands of the western Pacific, circumstances changed again. Struggles on land engaging one or more field armies became the rule in the Philippines and Okinawa. The increasing skill of Japanese commanders in defense and their desperation as the Allies approached the home islands made for appalling losses on both sides. In the final campaigns the medical service provided more conventional support, resembling that in the European theater. In the Philippines, however, the tropical climate continued to take its toll. Casualty figures suggested that the problem of adequately supporting prolonged high-intensity combat in such a disease environment remained unsolved at the war's end.

The presence of large civilian populations—friendly to the Allies in the Philippines but hostile on Okinawa—served to complicate medical difficulties still further. As Army medical officers in the ruins of Manila and their Navy brethren in the devastated towns of Okinawa confronted the aftermath of conquest, the tasks of reconstruction began to overlap those of the war. Medics going ashore in Japan took on duties of exceptional scope and difficulty, against the background of a shattered nation and the results of atomic war. In the rubble of Hiroshima and Nagasaki, medical officers viewed the effects of a kind of warfare that comprehensively destroyed doctors, nurses, and hospitals together with most of those to whom they might have given aid.

Medical military records of the time placed great emphasis on the problems brought by the war. Those problems were immense, and some were fundamentally insoluble. Yet the contemporary preoccupation with obstacles reflected in part the mindset of an era during which great strides in preventive and curative medicine—symbolized by the introduction of DDT and penicillin, but by no means limited to those discoveries—bred an optimism that threw into sharp relief the difficulties that remained. From the viewpoint of the present, the terrain no longer seems divided so clearly into monumental accomplishments and frustrating obstacles.

All in all, the American-Japanese war presents a picture of near-miraculous ingenuity in adapting to rapidly changing circumstances. It remains rich in interest for students of military medicine for a variety of reasons—the tropical diseases, the logistical problems, the wide spectrum of settings from the most primitive jungles to the shattered but complex urban areas of the Philippines and Japan. Yet its ultimate lesson may lie in the flexibility of spirit and organization shown by medical personnel. Trained, by and large, for work in a developed nation and a temperate climate, they mastered a new kind of medicine and practiced it over a vast and varied part of the Earth's surface. Because they learned

[2]Ibid., p. 27.

and adapted so well, they were able to save lives and improve health conditions among a kaleidoscope of peoples—American soldiers, New Guinea natives, Polynesians, Japanese, Filipinos, and Okinawans—during the years of a most bitter and unrelenting struggle.

In those harsh times the medics successfully maintained the fighting strength of the Army in remote and disease-ridden lands. No less important was their role in preserving the humane tradition, which alone gave promise of a better future.

Bibliographical Note

The Medical Department: Medical Service in the War Against Japan represents the end product of a long period of research and writing, which began in The Historical Unit (THU) of the Office of the Surgeon General. A large collection of THU note cards, assembled by anonymous researchers, Donald Mitchell's lengthy manuscript "The U.S. Army Medical Service in the War Against Japan," and Warren W. Daboll's manuscript "Medical Service in the Asiatic-Pacific Theater" are products of the unit's work. Although we found them to be an invaluable source of material, we developed the current volume largely from primary and printed sources. Specific attributions to records and repositories will be found in the footnotes, where each source is cited in full at first mention in each chapter and subsequent references in the same chapter are shortened. Abbreviations are identified in the list of abbreviations.

Many original documents, including most of those used by THU researchers, were first borrowed from and later returned to the collection of Army records at the National Archives and Records Administration (NARA), Suitland, Maryland, when The Historical Unit became part of the U.S. Army Center of Military History. We retrieved most of these documents from the National Archives on a loan basis for the duration of the project. Upon publication of this volume, they will be returned to the National Archives' new facility in College Park, Maryland, and incorporated into the Historical Unit Medical Detachment (HUMEDS) collection of Record Group (RG) 112, Records of the Office of the Surgeon General (Army). As part of our Historians files, the THU note cards cited by us will also be added to the HUMEDS collection.

Particularly useful documents were a number of interviews, manuscript histories, unpublished memoirs, and diaries of medical service in the Pacific theaters of war, prepared as a rule by officers who were on the scene, with personal knowledge of the organizations and actions they describe. Among these documents were the following: Wibb E. Cooper, "Medical Department Activities in the Philippines From 1941 to 6 May 1942, and Including Medical Activities in Japanese Prisoner of War Camps"; W. H. Waterous, "Reminiscences of Dr. W. H. Waterous Pertinent to World War II in the Philippines"; James W. Duckworth, "The Official History of General Hospital Number One, United States Army Forces in the Far East, at Camp Limay, Bataan, Little Baguio, Bataan, and Camp O'Donnell, Tarlac, Philippine Islands, From December 23, 1941 to June 30, 1943"; James O. Gillespie, "Recollections of the Pacific War and Japanese Prisoner of War Camps, 1941–1945," and "History of General Hospital Number 2"; Ruth B. Kelly, "History of Nursing Service in the South Pacific, World War II, 1945"; Josephine M. Nesbit, "History of the Army Nurse Corps in the Philippine

Islands, September 1940–February 1945"; Buell Whitehill, "Administrative History of Medical Activities in the Middle Pacific"; and Gordon H. McNeil, "History of the Medical Department in Alaska in World War II." Officers in the China-Burma-India theater were prolific, especially James H. Stone, author of a number of manuscript histories, including: "Organization and Development of Medical Supply in India and Burma, 1942–1946," and "The Hospitalization and Evacuation of Sick and Wounded in the Communications Zone, China-Burma-India and India-Burma Theaters, 1942–1946." Additionally, Robert G. Smith's two-volume "History of the Attempt of the United States Army Medical Department To Improve the Efficiency of the Chinese Army Medical Service, 1941–1945," proved invaluable.

In addition to RG 112, we consulted other NARA records of interest in RG 153, Records of the Office of the Judge Advocate General (Army); in RG 165, Records of the War Department General and Special Staffs; in RG 225, Records of the Joint Army and Navy Boards and Committees; and in RG 407, Records of the Adjutant General's Office, 1917–, especially the Philippine Archives.

We found another rich source of personal material on medical officers and their contributions to policy and practice in the archives of the U.S. Army Military History Institute (MHI) at Carlisle Barracks, Pennsylvania. The Maurice C. Pincoffs Papers were particularly informative on preventive medicine.

For the Navy medical story, volume 1 of Department of the Navy, Bureau of Medicine and Surgery, "The United States Navy Medical Department at War, 1941–1945," prepared in 1946 and presently in the files of the Bureau of Medicine and Surgery Archives (BMSA) in Washington, D.C., offered many valuable insights.

Among printed sources, we relied primarily upon the series United States Army in World War II, published in Washington, D.C., by the Army's Historical Division and its successor agencies, the Office of the Chief of Military History and the Center of Military History. Particularly important volumes covering the strategic, operational, and tactical aspects of the Pacific campaigns were Louis Morton, *Strategy and Command: The First Two Years* (1962), and *The Fall of the Philippines* (1953); Maurice M. Matloff and Edwin M. Snell, *Strategic Planning for Coalition Warfare, 1941–1942* (1953); Clarence McKittrick Smith, *The Medical Department: Hospitalization and Evacuation, Zone of Interior* (1956); and Stetson Conn, Rose C. Engelman, and Byron Fairchild, *Guarding the United States and Its Outposts* (1964); John Miller, jr., *Guadalcanal: The First Offensive* (1949), and *CARTWHEEL: The Reduction of Rabaul* (1959); Samuel Milner, *Victory in Papua* (1957); Philip A. Crowl and Edmund G. Love, *Seizure of the Gilberts and Marshalls* (1955); Philip A. Crowl, *Campaign in the Marianas* (1960); Charles Romanus and Riley Sunderland, *Stilwell's Mission to China* (1953), *Stilwell's Command Problems* (1956), and *Time Runs Out in CBI* (Washington, 1959); M. Hamlin Cannon, *Leyte: The Return to the Philippines* (1954); Robert Ross Smith, *The Approach to the Philippines* (1953), and *Triumph in the Philippines* (1963); Roy E. Appleman, James M. Burns, Russell A. Gugeler, and John Stevens, *Okinawa: The Last Battle* (1948); and Vincent C. Jones, *Manhattan: The Army and the Atomic Bomb* (1985).

No less important was the series Medical Department, United States Army in World War II, published in Washington, D.C., by the Army's Office of the Surgeon General, a source that provides both organizational studies and numerous physician-written accounts of the clinical problems encountered in the war against Japan. Using, to some degree, almost all of the volumes in the series, we found the following to be especially valuable: Blanche B. Armfield, *Organization and Administration in World War II* (1963); Charles M. Wiltse, *Medical Supply in World War II* (1968); John H. McMinn and Max Levin, *Personnel in World War II* (1963); Robert J. Parks, *Medical Training in World War II* (1974); Ebbe Curtis Hoff, ed., *Communicable Disease: Malaria* (1963), *Communicable Diseases Transmitted Through Contact or by Unknown Means* (1960), *Communicable Diseases: Arthropodborne Diseases Other Than Malaria* (1960), *Communicable Diseases Transmitted Chiefly Through Respiratory and Alimentary Tracts* (1958), and *Civil Affairs/Military Government Public Health Activities* (1976); B. Noland Carter, ed., *Activities of Surgical Consultants* (1962–64); W. Paul Havens, Jr., ed., *Activities of Medical Consultants* (1961), and *Infectious Diseases and General Medicine* (1968); Albert J. Glass, ed., *Overseas Theaters* (1973); Douglas B. Kendrick, *Blood Program in World War II* (1964); Tom F. Whayne and Michael E. DeBakey, *Cold Injury, Ground Type* (1958); and Frank A. Reister, *Medical Statistics in World War II* (1975). Also covering topics of importance is James H. Stone, ed., *Crisis Fleeting: Original Reports on Military Medicine in India and Burma in the Second World War* (1969).

Among medical sources that are not official publications, we found especially enlightening Earl Baldwin McKinley, ed., *A Geography of Disease* (Washington, D.C.: George Washington University Press, 1935); George MacDonald, *The Epidemiology and Control of Malaria* (London: Oxford University Press, 1957); James Stevens Simmons, *Global Epidemiology: A Geography of Disease and Sanitation* (New York: J. B. Lippincott Co., 1944); and Kurt J. Isselbacher, Raymond D. Adams, Eugene Braunwald, Robert G. Petersdorf, and Jean D. Wilson, eds., *Harrison's Principles of Internal Medicine*, 12th ed. (New York: McGraw-Hill Book Company, 1991).

We also found significant aspects of the medical story in a number of special studies and in corps and unit histories. Among the most useful were William F. Heavey, *Down Ramp!: The Story of the Army Amphibian Engineers* (Washington, D.C.: Infantry Journal Press, 1947); Edward J. Drea, *Defending the Driniumor: Covering Force Operations in New Guinea, 1944* (Fort Leavenworth, Kans.: Combat Studies Institute, 1984); Thomas M. Huber, *Japan's Battle of Okinawa, April–June 1945* (Fort Leavenworth, Kans.: Combat Studies Institute, 1990); Edmund G. Love, *The 27th Infantry Division in World War II* (Washington, D.C.: Infantry Journal Press, 1949), and *The Hourglass: A History of the 7th Infantry Division in World War II* (Washington, D.C.: Infantry Journal Press, 1950); William F. McCartney, *The Jungleers: A History of the 41st Infantry Division* (Washington, D.C.: Infantry Journal Press, 1948); Philip A. Schaefer, ed., *54th in Review: A Resume of the Activities of the 54th General Hospital, 1943–1945* (Tokyo: Dai Nippon Printing Co., 1946); Orlando R. Davidson, J. Carl Willems, and Joseph A. Kahl, *The Deadeyes: The Story of the 96th Infantry Division* (Washington, D.C.: Infantry

Journal Press, 1947); Richard J. H. Krebs [Jan Valtin], *Children of Yesterday* (New York: Reader's Press, 1946); Edward M. Flanagan, *The Angels: A History of the 11th Airborne Division, 1943–1946* (Washington, D.C.: Infantry Journal Press, 1948); [77th Division Association], *Ours To Hold It High: The History of the 77th Infantry Division in World War II* (Washington, D.C.: Infantry Journal Press, 1947); B[ertram] C. Wright, comp., *The 1st Cavalry Division in World War II* (Tokyo: Toppan Printing Co., 1947); Stanley A. Frankel, *The 37th Infantry Division in World War II*, ed. Frederick Kirker with John MacDonald (Washington, D.C.: Infantry Journal Press, 1948); [6th] Division Public Relations Section, *The 6th Infantry Division in World War II, 1939–1945* (Washington, D.C.: Infantry Journal Press, 1947); 33d Infantry Division Historical Committee, *The Golden Cross: A History of the 33d Infantry Division in World War II* (Washington, D.C.: Infantry Journal Press, 1948); and Francis D. Cronin, *Under the Southern Cross: The Saga of the Americal Division* (Washington, D.C.: Combat Forces Press, 1951).

In a war where joint and combined operations were the rule, the official histories of other American armed services also gave essential data. Preeminent among these works were Samuel Eliot Morison's *History of United States Naval Operations in World War II*, 15 vols. (Boston: Little, Brown and Co., 1947–62), and *The Two-Ocean War: A Short History of the United States Navy in the Second World War* (Boston: Little, Brown and Co., 1963). Also consulted were Robert D. Heinl, Jr., and John A. Crown, *The Marshalls: Increasing the Tempo* (Washington, D.C.: Historical Branch, G–3 Division, Headquarters, U.S. Marine Corps, 1954); Frank O. Hough, Verle E. Ludwig, and Henry I. Shaw, Jr., *Pearl Harbor to Guadalcanal*, History of U.S. Marine Corps Operations in World War II (Washington, D.C.: Historical Branch, G–3 Division, Headquarters, U.S. Marine Corps, 1958); Bennett F. Avery, ed., *The History of the Medical Department of the United States Navy in World War II*, 3 vols. (Washington, D.C.: Bureau of Medicine and Surgery, Department of the Navy, 1950–53); and Jeter A. Isely and Philip A. Crowl, *The U.S. Marines and Amphibious War: Its Theory and Practice in the Pacific* (Princeton: Princeton University Press, 1951). Mae Mills Link and Hubert A. Coleman, *Medical Support of the Army Air Forces in World War II* (Washington, D.C.: Office of the Surgeon General, USAF, 1955), was invaluable, as were the relevant volumes of *The Army Air Forces in World War II*, edited by Wesley Frank Craven and James Lea Cate.

For full coverage of the medical story, we also consulted Allied and Japanese histories. Essential to our understanding of the role played by America's Allies were Allan S. Walker's *The Island Campaigns*, Australia in the War of 1939–1945, Series 5, Medical (Canberra: Australian War Memorial, 1957); Field Marshal Viscount William J. Slim's *Defeat Into Victory* (New York: David McKay Co., 1961); and Louis Allen's *Burma: The Longest War, 1941–1945* (New York: St. Martin's Press, 1984). Providing welcome insights into the other side of the war were Saburo Ienage's *The Pacific War: World War II and the Japanese, 1931–1945* (New York: Pantheon Books, 1978), and Michihiko Hachiya's *Hiroshima Diary: The Journal of a Japanese Physician, August 6–September 30, 1945*, trans. and ed. Warner Wells (Chapel Hill: University of North Carolina Press, 1955).

Finally, the many nonofficial studies of the war proved indispensable. These included general studies of the war, especially Ronald H. Spector, *Eagle Against the Sun: The American War With Japan* (New York: Free Press, 1985), and John Costello, *The Pacific War* (New York: Wade Rawson, 1981). Among biographies, the multivolume work by D. Clayton James, *The Years of MacArthur*, 3 vols. (Boston: Houghton Mifflin Co., 1970–85), was notable. Studies of specific topics included Eric Larrabee, *Commander in Chief: Franklin Delano Roosevelt, His Lieutenants, and Their War* (New York: Harper and Row, 1987); Arnold C. Brackman, *The Other Nuremberg: The Untold Story of the Tokyo War Crimes Trials* (New York: William Morrow, 1987); Gordon W. Prange, in collaboration with Donald M. Goldstein and Katherine V. Dillon, *At Dawn We Slept: The Untold Story of Pearl Harbor* (New York: McGraw-Hill Book Co., 1981); William M. Leary, ed., *We Shall Return!: MacArthur's Commanders and the Defeat of Japan, 1942–1945* (Lexington: University Press of Kentucky, 1988); Walter Lord, *Day of Infamy* (New York: Henry Holt and Co., 1957); James H. and William H. Belote, *Corregidor: The Saga of a Fortress* (New York: Harper and Row, 1967); Richard B. Frank, *Guadalcanal: The Definitive Account of a Landmark Battle* (New York: Random House, 1990); Stanley L. Falk, *Decision at Leyte* (New York: W. W. Norton, 1966); Lyda Mayo, *Bloody Buna* (New York: Doubleday and Co., 1974); S. L. A. Marshall, *Island Victory: The Battle of Kwajalein Atoll* (Washington, D.C.: Infantry Journal Press, Penguin Books, 1944); Barbara W. Tuchman, *Stilwell and the American Experience in China, 1911–1945* (New York: Macmillan Co., 1970); Charlton Ogburn, Jr., *The Marauders* (New York: Harper and Brothers, 1959); Brian Garfield, *The Thousand-Mile War: World War II in Alaska and the Aleutians* (New York: Doubleday and Co., 1969); and Gwenfread E. Allen, *Hawaii's War Years, 1941–1945* (Honolulu: University of Hawaii Press, 1950).

Memoirs supplied an essential dimension to the story, notably Robert L. Eichelberger, in collaboration with Milton Mackaye, *Our Jungle Road to Tokyo* (New York: Viking Press, 1950); Walter Krueger, *From Down Under to Nippon: The Story of the Sixth Army in World War II* (Washington, D.C.: Combat Forces Press, 1953); Jay Luvaas, ed., *Dear Miss Em: General Eichelberger's War in the Pacific, 1942–1945* (Westport, Conn.: Greenwood Press, 1972); and Joseph W. Stilwell, *The Stilwell Papers*, arr. and ed. Theodore H. White (New York: William Sloane Associates, 1948). Valuable insights were found in the medical memoirs of the war, which include Gordon S. Seagrave, *Burma Surgeon* (New York: W. W. Norton and Co., 1943), and *Burma Surgeon Returns* (New York: W. W. Norton and Co., 1946); Alfred A. Weinstein, *Barbed-Wire Surgeon* (New York: Macmillan Co., 1948); George Sharpe, *Brothers Beyond Blood: A Battalion Surgeon in the South Pacific* (Austin, Tex.: Diamond Books, 1989); Katharine R. Pincoffs, comp., *Maurice C. Pincoffs, M.D.: Letters From Two World Wars and a Sketch of His Life by His Wife* (Baltimore: Garamond/Pridemark, 1967); Tressa R. Cates, *The Drainpipe Diary* (New York: Vantage Books, 1957); and Juanita Redmond, *I Served on Bataan* (Philadelphia: J. B. Lippincott Co., 1943). On the effects of the atomic bombs, useful works included Ashley W. Oughterson and Shields Warren, eds., *Medical Effects of*

the Atomic Bomb in Japan (New York: McGraw-Hill Book Co., 1956); and Committee for the Compilation of Materials on Damage Caused by the Atomic Bombs in Hiroshima and Nagasaki, *Hiroshima and Nagasaki: The Physical, Medical, and Social Effects of the Atomic Bombings*, trans. Eisei Ishikawa and David L. Swain (New York: Basic Books, 1981).

Finally, we made use, as appropriate, of the huge literature of articles in military, historical, and medical journals. Specific references will be found in the footnotes.

List of Abbreviations

AAA	Antiaircraft artillery
AAF	Army Air Forces
AAR	After-action report
ACofS	Assistant chief of staff
Adv	Advance
AG	Adjutant general
An	Annex
APA	Transport, attack
App	Appendix
Arty	Artillery
ASCOM	Army Service Command
ASurg	Assistant surgeon
AUS	Army of the United States
Bde	Brigade
BMSA	Bureau of Medicine and Surgery Archives, Department of the Navy, Washington, D.C.
Bn	Battalion
Br	Branch
Cav	Cavalry
CBI	China-Burma-India
Cdr	Commander
CG	Commanding general
CinC	Commander-in-chief
Cmd	Command
CMH	U.S. Army Center of Military History, Washington, D.C.
CNurse	Chief nurse
CO	Commanding officer
CofS	Chief of staff
COMSOPAC	South Pacific Command
Cong	Congress
CP	Command post
CPA	Central Pacific Area
CPBC	Central Pacific Base Command
CSurg	Chief surgeon

Def	Defense
Dept	Department
Det	Detachment
Dir	Director
Dist	District
Div	Division
Engr	Engineer
ETMD	Essential technical medical data
Exh	Exhibit
F	Fahrenheit
FA	Field artillery
FSurg	Flight surgeon
G–1	Personnel officer or section, division or higher staff
G–2	Intelligence officer or section, division or higher staff
G–3	Operations officer or section, division or higher staff
G–4	Supply officer or section, division or higher staff
G–5	Civil affairs officer or section, division or higher staff
Gen	General
GHQ	General Headquarters
GO	General Order
Gp	Group
Haw	Hawaii, Hawaiian
Hosp	Hospital
HQ	Headquarters
HUMEDS	Historical Unit Medical Detachment
Inf	Infantry
Insp	Inspection, Inspector
Instrs	Instructions
Intel	Intelligence
JB	Joint Board
L	Library
LCI	Landing craft, infantry
LCT	Landing craft, tank
LST	Landing ship, tank
Log	Logistics
Ltr	Letter

MAC	Medical Administrative Corps
MC	Medical Corps
Med	Medical
MFR	Memorandum for the record
MHI	U.S. Army Military History Institute, Carlisle Barracks, Pennsylvania
NARA	National Archives and Records Administration, Washington, D.C.
NP	Neuropsychiatric
Off	Officer
OofCSurg	Office of the Chief Surgeon
OofSurg	Office of the Surgeon
Opns	Operations
OQMG	Office of the Quartermaster General
PACU	Philippine civil affairs unit
Phil	Philippine
Plt	Platoon
Port	Portable
Prov	Provisional
QM	Quartermaster
RCT	Regimental combat team
Regt	Regiment
Rpt	Report
SC	Sanitary Corps
Sec	Section
Sess	Session
SG	Surgeon general
Sit	Situation
SO	Special Order
SofW	Secretary of War
SPA	South Pacific Area
SPBC	South Pacific Base Command
Spec	Special
Sta	Station
Surg	Surgeon, Surgical
Svc	Service
SWPA	Southwest Pacific Area

THU	The Historical Unit
USAFCBI	United States Army Forces, China, Burma and India
USAFFE	United States Army Forces in the Far East
USAFIA	United States Army Forces in Australia
USAFIBT	United States Army Forces, India-Burma Theater
USAFICPA	United States Army Forces in the Central Pacific Area
USAFIP-NL	United States Army Forces in the Philippines, Northern Luzon
USAFISPA	United States Army Forces in the South Pacific Area
USAFMIDPAC	United States Army Forces, Middle Pacific
USAFPAC	United States Army Forces, Pacific
USAFPOA	United States Army Forces, Pacific Ocean Areas
USAFWESPAC	United States Army Forces, Western Pacific
USASOS	United States Army Services of Supply
USFCT	United States Forces, China Theater
USFIA	United States Forces in Australia
USFIP	United States Forces in the Philippines
VD	Venereal disease
WD	War Department
WDGS	War Department General Staff
WPBC	Western Pacific Base Command

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